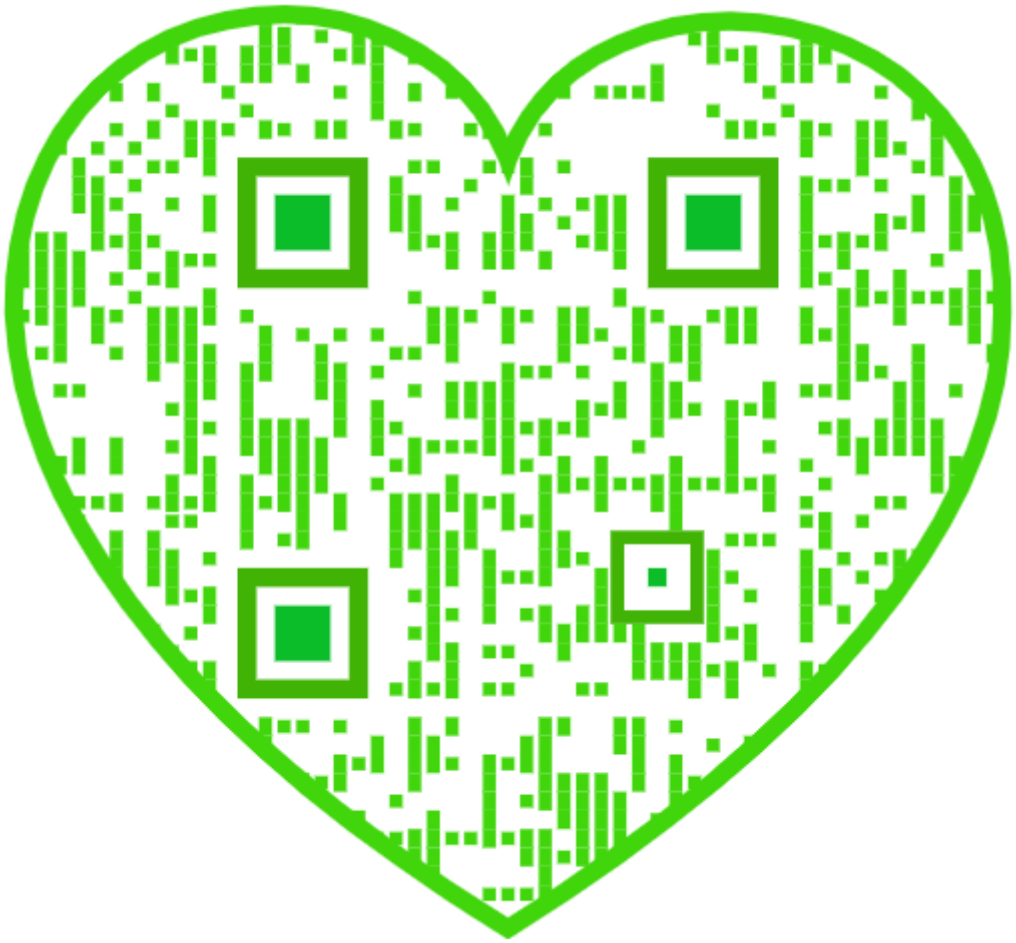

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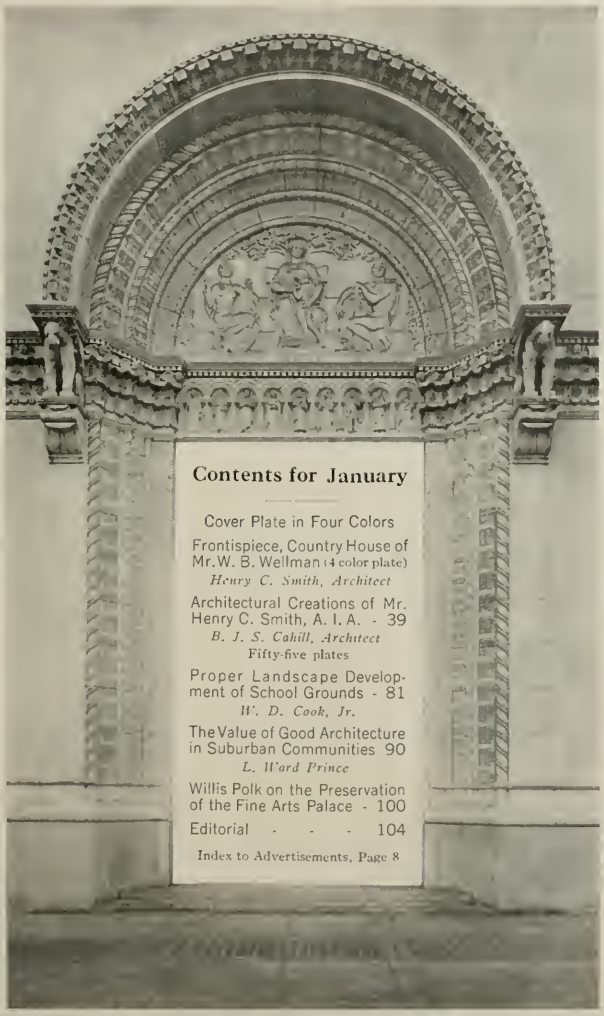

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THE ARCHITECT AND ENGINEER
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COUNTRY HOUSE OF MR. WILLIAM B. WELLMAN
HENRY C. SMITH, ARCHITECT

Frontispiece
The Architect and Engineer
of California
For January, 1916

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THE
Architect and Engineer
Of California

VOL. XLIV JANUARY, 1916 No. 1

Architectural Creations of Mr. Henry C. Smith, A. I. A.

By B. J. S. CAHILL, Architect.

Henry C. Smith, Architect

THE salient features of city architecture are mainly dependent on conditions of material, climate, and environment. Thus Paris is built on a stone quarry, London on a bed of clay, and New York on a small peninsula. Hence the elegant stone facades of the French metropolis and the classic refinement of her splendid boulevards. London, like Babylon of old, spreads its great bulk in a giant maze of brickwork; and the blend of its ruddy tones, veiled in Thames mist, gives its vistas a sombre harmony that compensates for much that is plain and ugly on close inspection. New York, having no room to spread, rises bodily in the air, each building striving like a cluster of eucalyptus trees—to out-top its neighbor.

Now, obviously, the architects who are mainly responsible for Paris, London, and New York have all had fundamentally the same training. Architecture is no parvenu among the arts, it is the oldest of them all. Nor is it provincial but international. All the civilized white world studies the same text books. But in Paris, because of the abundance of cut stone, only those architects highly trained enough to excel in the plastic intricacies of the classic orders and all their variants, can hope to come to the front. From this habit of working in soft stone, involving immense experience and competition, comes the unrivalled development the architecture of form in pilastered facades so notoriously perfected in Paris the beautiful.

But a London architect who worked along these lines would have a hard time because he would be going against the current. Across the channel the man who comes to his own is he who works with the clay brick and not the stone block. In London the same talent that practices formal design in stone, here studies texture, color and picturesque composition in brick and terra cotta. But if we cross another channel, a much wider one, we shall come upon conditions as different from Paris and London as a bar of pig iron differs from a slab of limestone or a lump of clay. For here in New York such is the wealth and congestion on the small island of Manhattan that local material, however cheap, cuts no figure as against the imperative need of light. And therefore the architects who have given New York its outward aspect are not those cunning in stone detail or ingenious

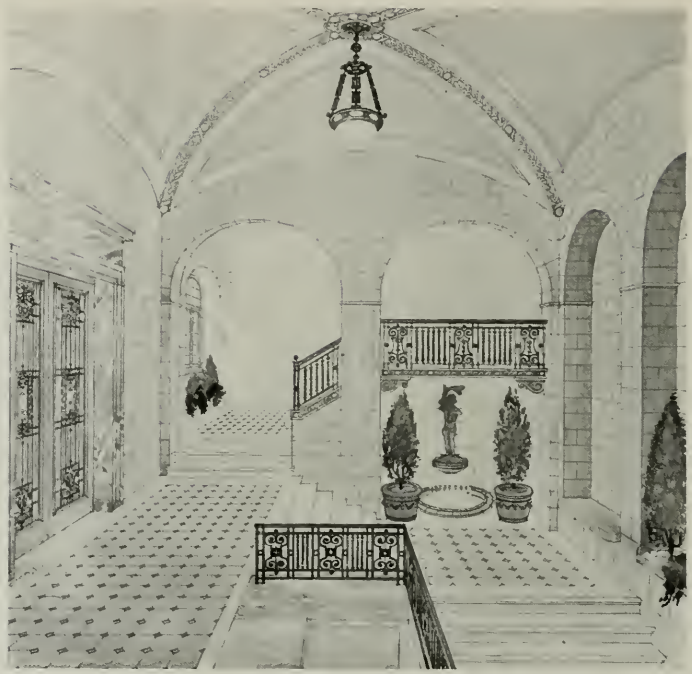
MARINE VIEW TERRACE, SAN FRANCISCO
HENRY C. SMITH ARCHITECT

in brick composition; but the men who have been sagacious enough to call in the structural engineer. What clay and stone have done for the architecture of London and Paris, steel has done for the architecture of New York.

But the whole point of these remarks will be lost in merely considering the materials that have so dominated the architecture of the world's leading cities if we overlook the fact that it is the men who have, by a sort of right instinct, fastened their enterprise and their talents on the real and local needs of their own metropolis rather than on merely academic and traditional ones.

In other words, success, distinction and a growing practice will not come to the architect who has merely training, ability and industry if at the same time he is not also working in harmony with the spirit of the place—the larger enveloping trend made by the conditions around him. And it very often happens that men of the highest qualifications fail to identify themselves with this **genius loci** while others with more daring, keener vision and really saner instincts, though perhaps otherwise handicapped, have won out in spite of minor drawbacks that their contemporaries have been able to detect but whose larger insight they have failed to appreciate. And this brings us to the consideration of the work of Mr. Henry C. Smith, who has created for himself a position of unique interest among the architects of San Francisco by working along lines that are distinctly in the spirit of the needs of our city.

And here it is time to ask what are the distinctive features of the city of San Francisco? If an air man could have flown over the peninsula before we had streets and buildings he would have made short answer: **sand hills!** Much of this sand was a mere sprinkling carried by the wind over solid elevations of argillaceous rock. Most of the sandy covering has now long since disappeared. But the hills remain, and owing to an unintelligent lay-out of the city made by the original surveyors a very large proportion of valuable lots are on steep slopes. This condition has worked havoc in the minds of many a property owner who has got the habit of thinking that every building must sit on a square shelf and that as a matter of course every hillside lot must be graded down to the sidewalk before any building could be even considered. In many parts of San Francisco one can see a graded lot cut right into the hillside, the owner being assured that, if this is paid for, the lot is of added value. In many places commanding a fine view this process has materially depreciated the property instead, besides exposing it to the dangers of landslides and seepage from the surrounding property. Then again other owners of steep hill plots have shown enough imagination to appreciate the value of a view but have thought it necessary to plant their building on a top shelf instead of on a bottom one. To reach these, long steep flights of steps have been necessary, entailing much terracing and wall building, besides wasting the best part of the property in mere approaches. The exceedingly ingenious, bold and picturesque way in which Mr. H. C. Smith has solved this problem to the profit of many an owner and to the delight of many a tenant is well known to every one in San Francisco. These successes in hillside building herewith illustrated mark the real beginning of Mr. Smith's fame and the foundation of a success in many other lines of work which has recently culminated in the highest award made to any architect by the Panama-Pacific International Exposition jury—a gold medal for his work in public school architecture.



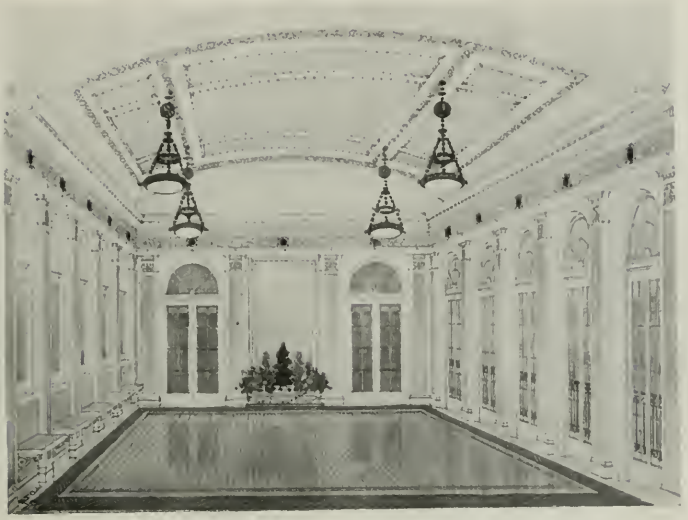
ENTRANCE LOBBY, MARINE VIEW TERRACE, SAN FRANCISCO
Henry C. Smith, Architect

II

Cliff Dwellings de Luxe!

The Zuni pueblos built in the cliffs might be taken as the crude prototypes of Mr. H. C. Smith's remarkable apartment houses illustrated in these pages, but the gap between them is the gap between a peashooter and a French 75. The general principle of course is very easy to grasp. One has only to illustrate it with a few toy building blocks. If these are piled on top of one another, each might represent an apartment group in a building of several stories. But if these blocks are placed against a steep slope so that they recede and overlap like a flight of steps with the same raking angle as the hillside, you get the principle of these remarkable apartments where the roof of one suite becomes the forecourt of the one above and behind it.

From the amateur's point of view nothing could be simpler than to build in this way on the side of any steep hill. The idea most certainly has



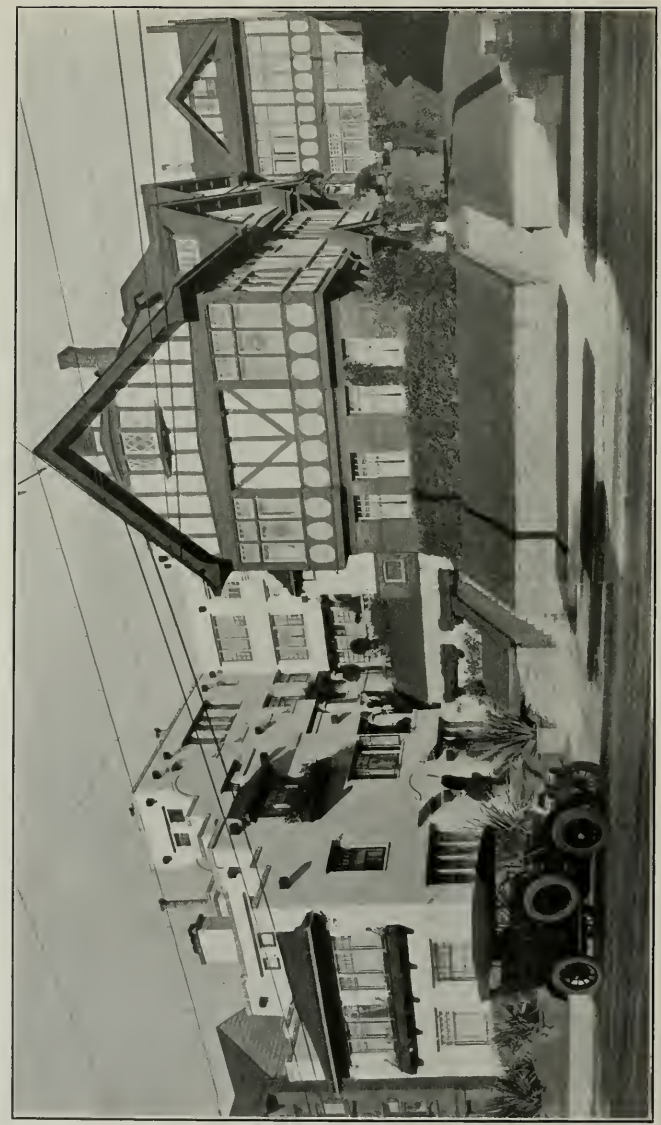
BALL ROOM, MARINE VIEW TERRACE, SAN FRANCISCO
Henry C. Smith, Architect

APARTMENTS FOR MR. A. B. HAMMOND AND DR. L. MACE, SAN FRANCISCO
Henry C. Smith, Architect

THE MARSH APARTMENTS, SAN FRANCISCO
Henry C. Smith, Architect

AN ENTRANCE TO "LA HACIENDA" APARTMENTS, SAN FRANCISCO
Henry C. Smith, Architect

AN ENTRANCE TO "LA HACIENDA" APARTMENTS, SAN FRANCISCO
HENRY C. SMITH, ARCHITECT



"LA HACIENDA" AND "THE TERRACES," APARTMENTS, SAN FRANCISCO, CALIFORNIA
HENRY C. SMITH
ARCHITECT

occurred to many architects, but these same architects could be called to witness that the scheme, while all very well in theory, was, as they thought, **impracticable**, the fact being that the average man in any line of work is instinctively adverse to trying out new experiments. In planning an apartment house in this way so that a section of it appeared as a saw-tooth flight of steps, a host of minor difficulties would crop up at every turn to discourage and dismay the designer. If after intense study and patient ingenuity the thing were done on paper it would then still, most likely, have to run another gauntlet of discouragement, possibly from the owner himself, who would in all likelihood argue that he was in no mood to risk his good money on an untried and impracticable fad. In fact any architect of any experience whatever can see at once that so radical an innovation would have everything against it until by dint of sheer cleverness in planning, backed by sheer force in realization the thing became a reality. And then of course every one would wonder why it wasn't done before. Moreover, the achievement looks so obvious and simple when done that we are all too prone to take it for granted and quite overlook the amazing difficulty of the initial effort. I speak with intimacy and with feeling on this subject of doing things in a new way for good and sufficient reason. It is hardly necessary to refer in detail to the various hillside apartments and homes designed and executed by Mr. Smith. But as we spoke of environment as a determining factor it might be well to note that the style adopted for this type of work is distinctive, local and structurally inevitable. First we have the hills on which to build **en echelon**, then comes the need of concrete walls and finally the Spanish mission tradition. If we add the further facts that lots of sunlight and air are indispensable to San Franciscans, and that flowers bloom all the year round we have all the determining factors of such fascinating compositions as the Hammond and Mecca apartments: the Frank and Louis Hunter apartments; the Marsh and the Hacienda apartments, and others to be seen in the illustrations.

The very last word in this type of building is a projected community apartment to be known as Marine View Terrace, and to be built on the southeast corner of Green and Taylor streets. This most interesting and unique group of homes combines all the attractive features peculiar to the other hillside buildings with others, some new ones worthy of special note. First there is the community idea so successful in New York, where a group of congenial home-seekers club together and share an individual pro rata interest in the land, besides his own individual apartment of four or even twelve rooms if necessary. Next in interest is a row of private garages off the sidewalk which forms part of the main group and yet is separated from because not under the main roof. But most interesting of all, and as far as I know, a real innovation, is a raking automatic elevator running in a "slantingdicular" way clear through the open court in the center of the block from the street sidewalk to the topmost rear apartment with landings at each story as the apartments rise and recede on the hillside.

The remarkably clear and clever perspective which shows this entire scheme is well worth an architect's special study. The whole lay-out is complicated in the extreme and yet it is so thoroughly well worked out that it appears simple and easy. The apartments themselves must be absolutely fascinating to their fortunate possessors while the design, judged from a strictly architectural viewpoint, is in every way admirable with a directness

HUNTER APARTMENTS,
SAN FRANCISCO
Henry C. Smith, Architect

and simplicity that is quite beyond criticism. In some of this class of buildings one detects redundancies, features worked in for picturesque effect. In this scheme there is an entire absence of anything of the sort. And this restrain has in no wise impoverished the general ensemble.

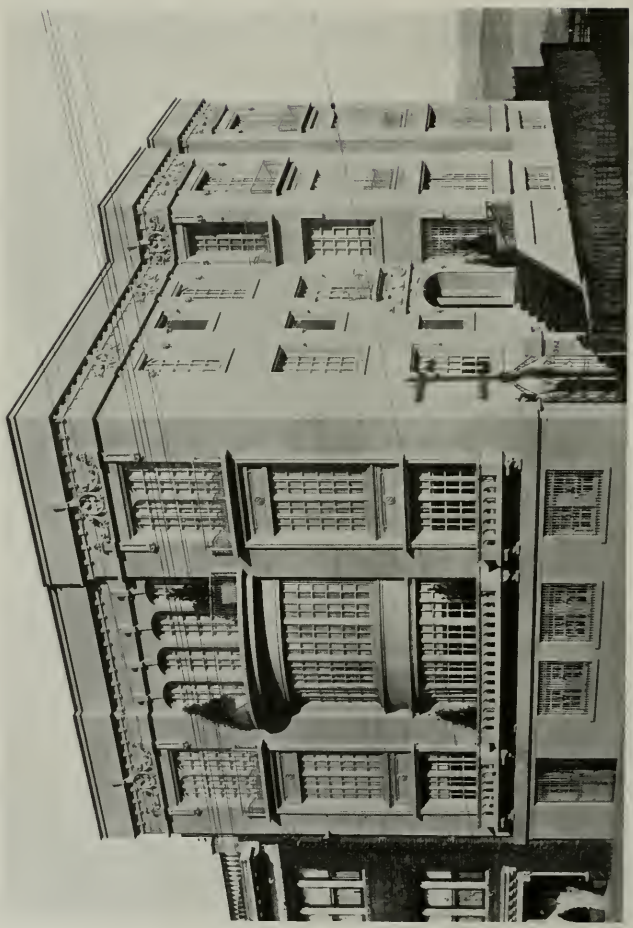
Those who care for technical details will be interested to know that the track of the slanting elevator rises at a uniform angle of exactly 45 degrees.

Other Architectural Adventures

Next to these famous hillside creations Mr. H. C. Smith's claim to recognition rests on his many schoolhouse designs, which will be discussed more in detail further on. Outside of these well defined fields where Mr. Smith's talents have received fullest expression, are a number of various structures devoted to various purposes, ranging from banks and business blocks to town houses and country estates, not forgetting an ambitious suggestion for an art institute on top of Nob Hill. Regarding this latter it may be noted how much more a master is Architect Smith when he plants a building on a hillside than when he merely plans one on the hill top. The former are real solutions of real problems—the latter a mere pencil fantasia such as a score of draftsmen could knock off within as many hours, and probably with more success. Yet such is the perversity of human nature that quite possibly its author fancies this conception more highly than anything else he has ever done.

PROPOSED ART GALLERY INSTITUTE, NOB HILL, SAN FRANCISCO
Henry C. Smith, Architect

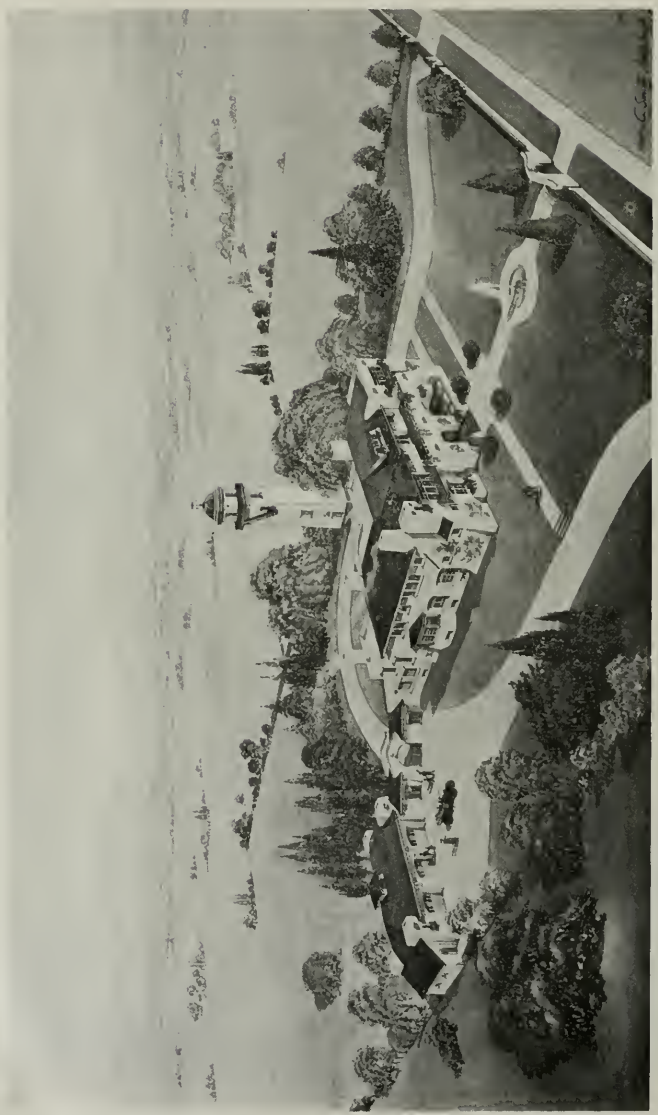
RESIDENCE OF DR. ADELAIDE BROWN, SAN FRANCISCO
Henry C. Smith, Architect



BROWNLEE APARTMENTS, SAN FRANCISCO
HENRY C. SMITH, ARCHITECT

ENTRANCE TO BROWNLEE APARTMENTS, SAN FRANCISCO
Henry C. Smith, Architect

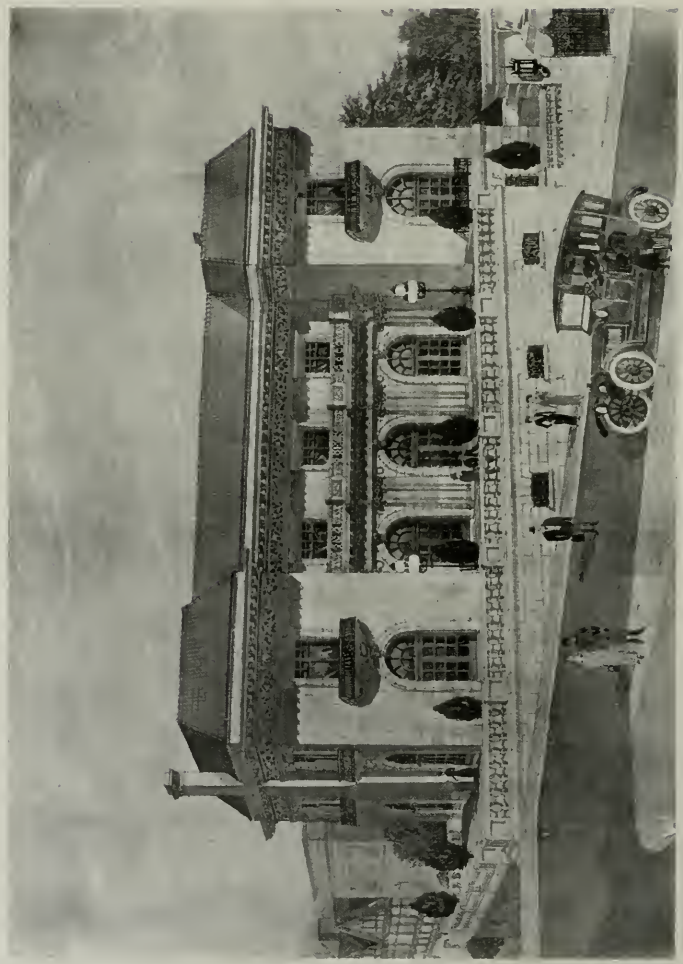
HAROLD LAW RESIDENCE, PRESIDIO TERRACE, SAN FRANCISCO
Henry C. Smith, Architect



COUNTRY ESTATE OF MR. R. D. MAYES, DIXON, CALIFORNIA
HENRY C. SMITH,
ARCHITECT

ALTERNATE SCHEME FOR MR. R. D. MAYES' COUNTRY HOUSE, DIXON, CALIFORNIA
Henry C. Smith, Architect

MITCHELL RESIDENCE, COLUSA, CALIFORNIA
Henry C. Smith, Architect



PERSPECTIVE, CLARENCE MUSTO RESIDENCE, SAN FRANCISCO
HENRY C. SMITH, ARCHITECT

NORTHEAST VIEW, CLARENCE MUSTO RESIDENCE
Henry C. Smith, Architect

SOUTHEAST VIEW, CLARENCE MUSTO RESIDENCE
Henry C. Smith, Architect

DINING ROOM, CLARENCE MUSTO RESIDENCE
Henry C. Smith, Architect

ENTRANCE HALL, CLARENCE MUSTO RESIDENCE
Henry C. Smith, Architect

DRAWING ROOM, CLARENCE MUSTO RESIDENCE
Henry C. Smith, Architect

Indeed it is perfectly natural that any designer capable of breaking away from the traditional thing and giving us such a novel creation as the Marine View apartments should be impatient of the restraints needed to do the urbane and formal thing. All really strong and vital work is a trifle wild and wooly and it is as inevitable as a chemical formula in all and every one of the arts that what is gained in force and pioneering is lost in good form and polish. Vital innovations can never be expected from one long trained to respect form and finish before everything else. The public—the world outside—stands somewhere between these products—respectful of traditions and also ready for new adventures out of traditional bounds. It follows, therefore, that an innovator in any art or science will be welcomed by the public long before he is acknowledged by his confreres. Most of the buildings designed by Mr. Smith make their appeal directly to the public. He has shown how to build beautifully and profitably on the hillsides by attacking the problem directly and without reference to what others would do. And in most of his work one can detect an untrammelled free "attack" which sometimes produces odd and unfamiliar results but which always goes to the root and yields something vital and interesting.

Mr. Smith is most successful, we think, when working in the Mission style, whether on the hillside, on the level, or on any mixed site between the two. Most interesting among these are the picturesque country places at

SOUTHEAST VIEW, W. B. WELLMAN RESIDENCE, LOS ALTOS
Henry C. Smith, Architect

GARAGE COURT, W. B. WELLMAN RESIDENCE, LOS ALTOS
Henry C. Smith, Architect

EAST VIEW, W. B. WELLMAN RESIDENCE, LOS ALTOS
Henry C. Smith, Architect

SOUTH VIEW, HARTMAN RESIDENCE, SAN JOSE, CALIFORNIA
Henry C. Smith, Architect

GARDEN ENTRANCE, HARTMAN RESIDENCE, SAN JOSE, CALIFORNIA
Henry C. Smith, Architect

CANTRELL RESIDENCE FLATS, SAN FRANCISCO
Henry C. Smith, Architect

RESIDENCE OF MR. G. MUSTO, SAN FRANCISCO
Henry C. Smith, Architect

BREAKFAST ROOM, RESIDENCE OF MR. G. MUSTO, SAN FRANCISCO

LEESMONT APARTMENTS, SAN FRANCISCO
Henry C. Smith, Architect

Dixon for Mr. R. D. Mayes and "Overbrook" at Los Altos. Among city homes in this class the residences built for Mrs. E. V. D. Johnson in Presidio terrace and the Hartman residence in San Jose are most attractive. Lastly and least pretentious of all, but of consummate merit because it carries the distinction that unaffected simplicity invariably confers, the austere little residence of Dr. Adelaide Brown.

Among notable departures from this style of work we must include the two residences for Mr. Musto, the one a very sound design in English half timbered work on a basement of brick and the other a much more pretentious effort in Frenchified Renaissance.

Perhaps most successful of all other departures from the Mission style are the Brownlee apartments, justly admired for the bijou beauty of their interiors and the elegance bestowed on their exteriors by an architectural envelope of Elizabethan Gothic.

* * * * *

The illustrations on another page show Mr. H. C. Smith's country home, "Far Hills," where the architect spends all of his time not taken up with the pressing cares of business. As an outlet to superfluous energy and as a foil to the nerve-racking problems of the drawing board, Mr. Smith lets off steam, as it were, in mechanical construction of litch gates, summer houses, rustic pergolas and other embellishments with which, from time to time, he adorns the grounds of his beautifully wooded estate near Los Gatos, California.

GUESTS' CABIN, "FAR HILLS," COUNTRY PLACE OF MR. HENRY C. SMITH

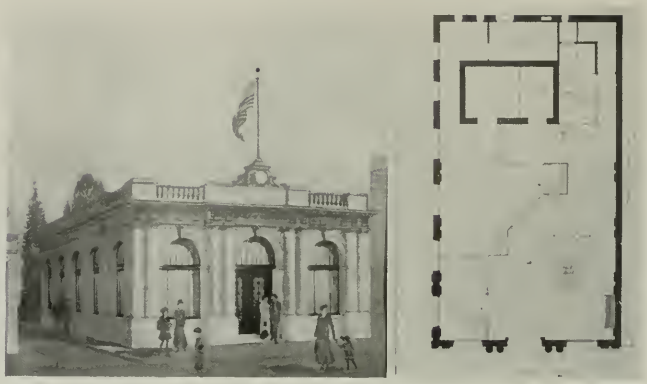
"BROILER" AND KITCHEN, "FAR HILLS," COUNTRY PLACE OF MR. HENRY C. SMITH, LOS GATOS

RUSTIC ENTRANCE TO "FAR HILLS"
(The cover design is taken from this view)

HALL OF RECORDS, COLUSA, CALIFORNIA
Henry C. Smith, Architect

CARNEGIE LIBRARY, HAYWARD, CALIFORNIA
Henry C. Smith, Architect

COLUSA LIBRARY BUILDING, COLUSA, CALIFORNIA
Henry C. Smith, Architect



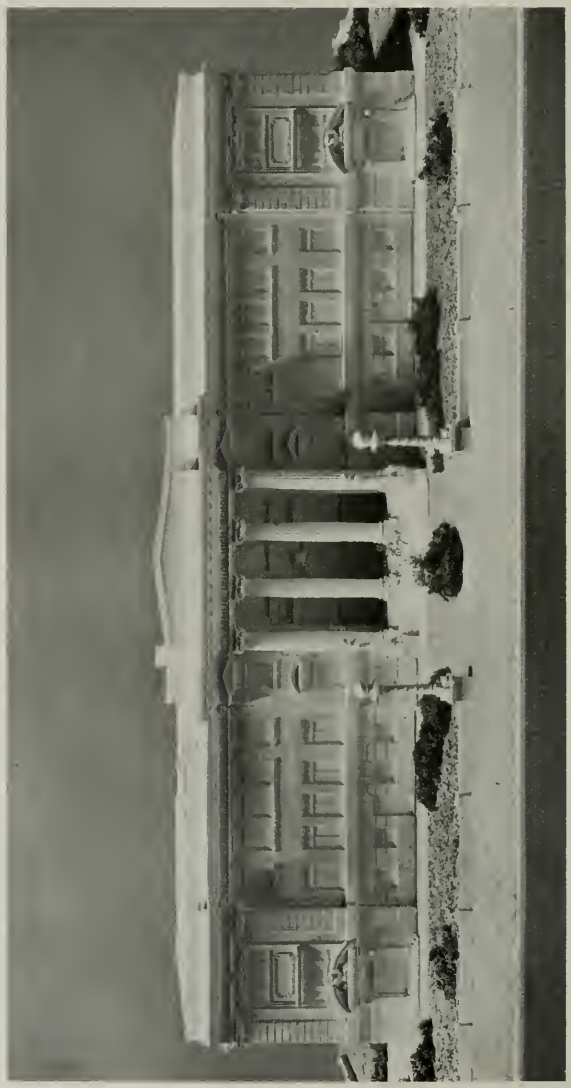
BANK OF RIO VISTA
Henry C. Smith, Architect

A NORTHERN COUNTY COURT HOUSE
Henry C. Smith, Architect

PROPOSED GRAMMAR SCHOOL, RIO VISTA
Henry C. Smith, Architect

School Houses

An architect who is awarded a gold medal for the plan and model of a model schoolhouse by a great international exposition might be considered by one not familiar with all the facts, to have experienced a stroke of luck. It might be assumed that he spread himself on this particular exhibit. Nothing could be further from the truth. Mr. Henry C. Smith began his career as a schoolhouse architect and has grown up in continuous and constant touch with this particular line of work. Having seen, therefore, the amount of energy and thoroughness with which he assailed the hillside problem, and how masterful was his solution it would follow that the same courage, intelligence and energy applied to school problems would inevitably yield results of conspicuous merit. The gold medal award is merely the crowning evidence of long experience and very intense application to school problems in all their aspects. There can be no question whatever that the average architect falls short in his planning for one, and only one reason. He does not give enough study to the problem in hand. He may lack the divine capacity to "take infinite pains." He may be indolent or too easily satisfied with his first results. It is safe to say that not one plan in a hundred is sufficiently worked over. Our architects are too sparing with the eraser. To parody Goethe's famous definition of style it might be said: "By what has been obliterated, I discover the master plan." We are most of us afflicted with the one greatest vice of the time—we are all in too much of a hurry. The first solution we hit upon in any problem we think is good enough; whereas the truth is that the real solution lies only in a multitude of endeavors. To quote Victor Hugo "your great man is the antithesis of his times." And if therefore we live in an age when everybody is in a rush, the man who works with untiring persistence has won out over all his competitors. Edison's dictum that "genius is two per cent inspiration and 98 per cent perspiration" puts the whole matter in a clever epigram. And it will be found in an architectural competition that the man who wins first place out of twenty plans is as often as not the man who first of all took care that the plan that he publicly submits to compete with nineteen others has first won out privately over a score or more plans of his own!



PLASTER MODEL, ARMIJO UNION HIGH SCHOOL
HENRY C. SMITH, ARCHITECT

ARMIJO UNION HIGH SCHOOL, FAIRFIELD, CALIFORNIA
HENRY C. SMITH, ARCHITECT

MAIN ENTRANCE AND FACADE, ARMIJO UNION HIGH SCHOOL, FAIRFIELD, CALIFORNIA
Henry C. Smith, Architect

POMONA HIGH SCHOOL, POMONA, CALIFORNIA
HENRY C. SMITH, ARCHITECT

RIO VISTA JOINT UNION HIGH SCHOOL
HENRY C. SMITH, . ARCHITECT

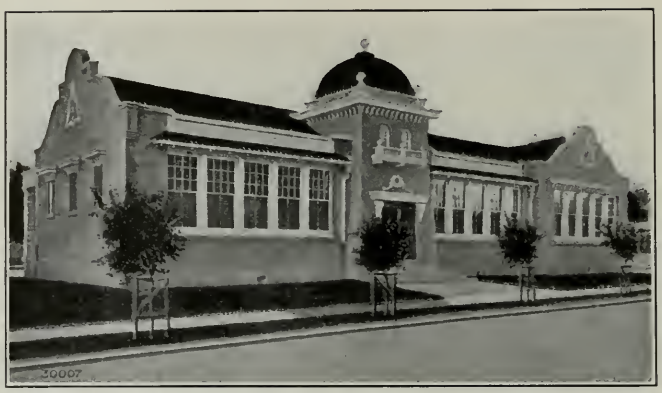
MAIN ENTRANCE, RIO VISTA HIGH SCHOOL
HENRY C. SMITH, ARCHITECT

ALTERNATIVE SKETCH, RIO VISTA JOINT UNION HIGH SCHOOL
Henry C. Smith, Architect

UNION HIGH SCHOOL, DIXON, CALIFORNIA
Henry C. Smith, Architect

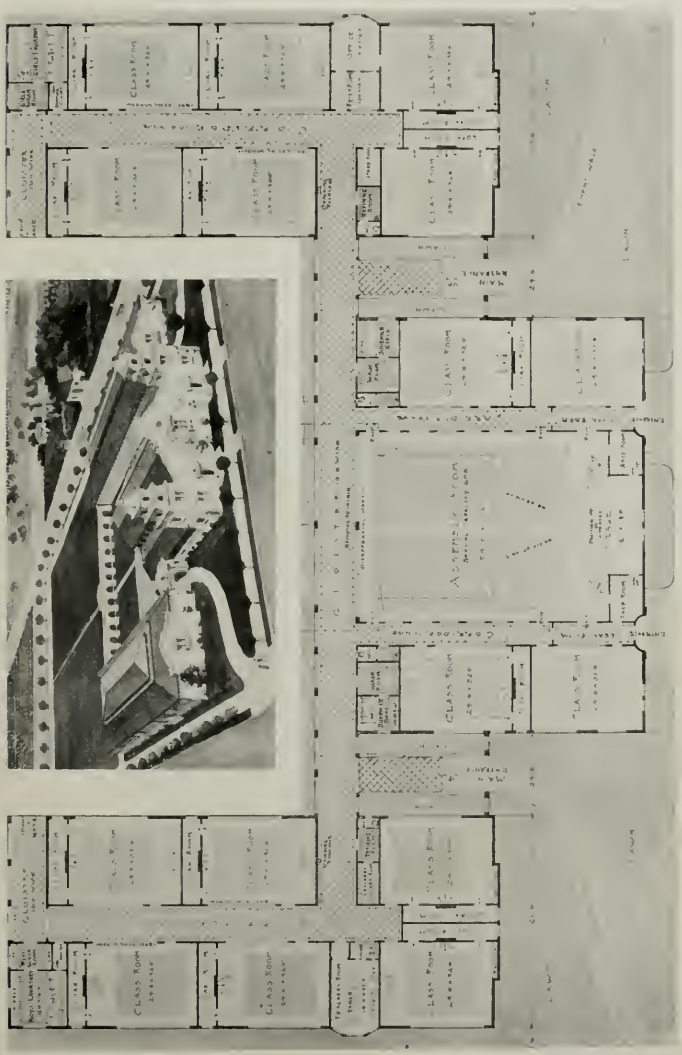
PATTERSON HIGH SCHOOL, PATTERSON, CALIFORNIA
Henry C. Smith, Architect

GRAMMAR SCHOOL, LOS ALTOS, CALIFORNIA
Henry C. Smith, Architect



GRAMMAR SCHOOL BUILDING, MODESTO, CALIFORNIA
Designed by Henry C. Smith, Architect

HORACE MANN GRAMMAR SCHOOL, SAN IOSE
Henry C. Smith, Architect



MODEL PLAN, GRADED SCHOOL, MISSION DESIGN
HENRY C. SMITH, ARCHITECT

ACADEMY BUILDING, POLYTECHNIC GROUP, HAYWARD
HENRY C. SMITH, ARCHITECT

BIRDSEYE VIEW, POLYTECHNIC HIGH SCHOOL GROUP, HAYWARD
HENRY C. SMITH, *ARCHITECT*

It is comparatively easy to string a lot of given class rooms together in a well-lighted, symmetrical scheme, but to do this efficiently without wasting a foot of space, to toil and moil over every possible move that makes for condensation, to re-align with infinite patience every wall and partition until complexities are finally smoothed out into an unwrinkled smoothness of perfection—this is the task that calls for a fighting, dogged strength quite beyond the powers of the average man. And yet this is precisely the situation presented by all building propositions, school houses not excepted. For the problem is always the same, the maximum of efficiency in all that is needed in a school achieved at the minimum of outlay.

In all the school plans drawn by Henry C. Smith can be detected this intensive study, knitting all parts into the most compact organism with a net efficiency permeating the whole and not an inch of space to waste nor a needless brick to pay for.

With this untiring thoroughness harnessed to a keen and nimble mind it follows that any building lay-out, be it school or anything else, must emerge finally as near to perfection as it is possible to expect.

Any type of building planned on these principles of eliminating the useless and the unfit, absolutely and inevitably **must** in the long run win out against all others not so well thought out.

Because in this we are merely stating the eternal principles of nature and nature's own methods in every organism from a blade of grass to a human being.

* * *

The Business Outlook

THE Wells Fargo Nevada National Bank of San Francisco recently published a four-page leaflet under the above caption, and the following abstracts are made for the benefit of the pessimistic:

Confidence is fast being restored and at some industrial centers business is reported to be more active than at any time since the outbreak of the world-war. A factor of much importance has been the enlarged buying of railroad supplies and the resumption of improvement work by various transportation systems. This is significant; first, because it follows a long period of comparative inactivity in the equipment industry; and second, because of the known influence of railroad buying in promoting general recovery from business depression. There is an actual shortage of cars in sections of the grain belt, while the congestion of freight at New York City, San Francisco and elsewhere is causing hardships to shippers. The demand for steel products at advancing prices is reported to be unprecedented, with manufacturers disinclined to book heavy orders for next year; the country's iron production during October broke all records, amounting to 3,125,000 tons, as against a previous high record total of 2,800,000 tons, and a daily output—the largest ever known—of 100,822 tons; charters filed in Eastern states for new corporations having $1,000,000 capital or over exceeded, during October, $208,600,000 capitalization, compared with only $35,400,000 in the same month of 1914. while new financing last month aggregated $210,000,000, which was the largest monthly total since February.

Optimism is displacing pessimism throughout the country, although the war continues to be the single influence overshadowing everything else. But much of the betterment in business has been in lines not related to "war orders" or to an abnormal demand from neutral markets. This is fortunate, since the sort of prosperity that is dependent upon war business alone is too ephemeral to be of lasting good. The best news that the country could receive would be the ratification of a peace compact ending the war and putting the world on a peace basis again. No one knows when that happy result will be achieved nor what further struggles are necessary to bring it about. The world-war is still the greatest deterrent to business enterprise, and until the end can be clearly foreseen, it is idle to suppose that new construction projects on a large scale can be taken up.

Proper Landscape Development of School Grounds

By W. D. COOK, JR., Fel. Am. Soc. Landscape Architects.

[*The following notes by Mr. Cook were written on account of the recent sale of school bonds in Los Angeles, Mr. Cook being anxious to call attention to the fact that buildings are not the only things to be considered. The proper landscape setting for the buildings and the development of the grounds are of equal importance.*

Almost without exception the designing of the grouping of the buildings is left entirely to the architect, and the planting is left to local nurserymen or gardeners, and the results are not what they should be.—EDITOR.]

THIS day and age calls for efficiency in every line of human endeavor, and economy is the password, or should be, on all works of a public nature depending on public funds for financial support.

It is a day of specialization, the employment of experts is universally regarded as being true economy and this certainly applies to school work as much as to any other. We look to our educational institutions for the training of specialists in architecture, medicine, law, landscape architecture, agriculture, etc., and we also look to them to make use of such men in their future development work.

Selection of Sites

The landscape architect is the logical man to assist the school board in the selection of school sites, for the reason that his training enables him to select a site that can be developed to the best advantage from a landscape point of view.

He knows the amount of land needed to develop a comprehensive plan. He knows soil conditions, and the capacity of the land for the growing of trees and shrubs, the maintenance of lawn areas, and the relative cost of upkeep between two different sites, and as maintenance is a constant factor of expense it should be given careful consideration.

Take two sites of equal area-desirability, convenience, topographical advantages, etc., the one may cost 50 per cent more to develop and maintain because of poorer soil conditions than the other, and this alone would determine which should be chosen, even if the initial cost per acre were considerably more for the selected site.

Survey

Another important matter is the right kind of a topographical survey. A survey made from specifications furnished by the landscape architect is far more comprehensive than that ordinarily made for such purposes. It is the worst possible economy to scrimp on engineering services at this stage of the work. Within the experience of the writer covering some twenty-five years, it has been demonstrated that a careful survey has many times saved enough money in foundation work on the buildings and grading to cover the cost of the survey many times over.

A careful survey enables the landscape architect, the architect and the engineer to plan improvements in the office, it saves innumerable visits in the field of high priced men, and is therefore true economy. In other words it furnishes the foundation work upon which all subsequent work is based and it must be right.

Preliminary Plans

After the board has determined upon the number of buildings to be built, in consultation with the architect and landscape architect the type of architecture for the group should be settled. It is assumed that the

board has employed an architect who specializes in school work, and preferably in the particular type of architecture chosen for the group.

The location of the several buildings should then be studied individually and as a whole in their relations to each other, the amount of setting necessary to show each building to the best possible advantage, and their relation to a general campus scheme.

These plans are studied over the topographical map, and the grades established not only around the buildings but the floor levels as well. The walks and drives (if any) are then planned and they must be so located as to serve their purpose to the best possible advantage, and with the least inconvenience. If they are not properly designed, evidence of poor planning will soon become apparent by numerous short cuts made by the students in passing from one building to another.

This is one reason why so many of our older schools, universities and colleges are spending so much money in the improvement of their grounds. If they had been properly designed in the first place they would have saved this expense today.

The writer knows of but one university in the United States where such foresight was exercised in the early days—some of our younger universities have followed this example with excellent results, and more will as the advantages are realized.

Grading Plans

Once the preliminary details are settled the architect can begin work on his floor plans and elevations, while the landscape architect is busy on the grading plans. These plans determine the disposition of surface waters, the disposition of cut or fill, areas for the disposition of top soil under lawn areas and shrubbery beds, areas to be in gravel, such as playgrounds, tennis courts, ball fields, running tracks, the orientation for the different games, amount of room required for each, etc. Such plans enable the landscape architect to balance his quantities and dirt need be handled but once, more economy.

Planting Plans

While the construction work is going on the landscape architect can be busy on the planting plans, such plans showing where to plant, what to plant and the quantity of trees and shrubs required for the scheme, he can be securing estimates from reliable nurserymen, order plants and begin planting operations upon completion of the grading and construction work.

Landscape Gardeners

It is true economy to employ a landscape gardener before a shovelful of dirt is turned, with the plans of the landscape architect in hand he can direct the placing of the top soil to such areas as require it. It so often occurs that dirt from cellar excavations is dumped over areas of good soil, and is spread over such areas, making it almost impossible to raise anything but Bermuda grass.

He is the man to take charge of the physical execution of the landscape plan under the direction of the landscape architect.

He is also the man to place the trees and shrubs as fast as they arrive and to take care of same after planting, to make and sow the lawns. Upon the careful execution of his work depends the future maintenance cost for upkeep of the grounds, and money spent for such services is true economy.

Economical and Practical Value of Comprehensive Plans

The economy of having a comprehensive plan lies in the fact that the entire project can be outlined on paper, and the vitally important portions of the plan carried out first, the less important waiting until such time as funds are available. The work can be carried on from year to year in an intelligent manner and the units of the design fall into place. The result will be a finished piece of work that will be a credit to all concerned.

It eliminates confusion and haphazard planning which, under any and all conditions, is expensive.

The practical value of such plans is very great. To quote one actual example will be enough. Plans were prepared for a great university proposition—funds had been raised for all of the work with the exception of the administration building, which was the keystone for the group. These plans were submitted to the man whose contribution was needed. When he was shown the position his building was to occupy, and a picture of the entire group, he immediately gave the necessary funds to carry out the project. Merely telling this man what was proposed had not secured the funds. He had to be shown.

* * *

Engineer Versus the Architect

IN a few recent instances of construction of large buildings in the Twin Cities the engineer has appeared as a possible rival of the architect to divide with him the percentage fee for the plans. In these cases the engineer has made practically an independent direct contract with the owner.

The question naturally follows, to what extent will this new activity of the engineer develop; and how much of the fee which has been going to the architect, based on the entire cost of the building, will go hereafter directly to the engineer.

Evidence could be marshalled here to show that the incidents referred to in the local field are portentous, even ominous. We could mention the "architectural engineers" of Chicago who engage with an owner to furnish plans and construct the entire building. They do this by employing an architect in about the same manner, and relation, as architects in getting the supplementary services of engineers in these cities. We might mention a very recent report on conditions of construction in Germany, by an architect of our acquaintance. He found that the engineer was looming up there with more authority than ever, and dividing the fees. He found that the architecture of a building was being subjected to its engineering plans.

But the encroachment of the engineer on the field of the architect need not cause the latter much anxiety, if any. The instances we know of prove to us, chiefly, that the engineers were unusually energetic. They used argument and influence, and won. They were engineers of prominence and solid achievement.

The architect is still the idealist and it seems to our humble abode of perception that he will always be so regarded by the public. Engineering is engineering; architecture is architecture. It was not an engineer who caused the White City of the Chicago World's Fair to appear, but an architect who imagined the revelation as a whole. And because the architect sees the work in any instance, as a whole, as well as in detail, his advance realization running into all nooks and corners, shapes, colors, contrasts and the rest, as the specifications are spun out, it follows that he naturally should take entire charge of the construction. We have referred before to a practice in France of making the architect the sole arbiter of the work, and the financier; and the one man responsible to the owner in case anything goes wrong.—Improvement Bulletin.

Architects the Scene Painters of the World

ARNOLD W. BRUNNER, past president of the Architectural League and New York Chapter, A. I. A., a member of the Art Commission of the City of New York and one of the leading architects of the United States, is the author of a paper that created something of a ripple at a recent meeting of the National Institute of Arts and Letters at Boston.

"Architects are the scene painters of the world," said Mr. Brunner. "Much of the scenery, the backgrounds of great events, remain today as records and are, perhaps, more convincing than written history. Constructed of enduring materials, these scenes of marble, granite and bronze bring to our senses a vivid realization of stirring actions and heroic deeds of actors long since gone.

"To regard architecture as a background may seem to relegate it to a secondary place and to indicate a lack of appreciation of its importance. And by architecture I mean all that the word implies—that art so often called the noblest of the arts because it embraces the others, sculpture, painting, the treatment of the landscape, and today the newer architecture of cities. It is a mixed art largely diluted, or strengthened, if you please, by science. Its aim is to produce a combination of the useful and the beautiful.

"I have heard it charged that our training and practice have a tendency to make us grow more interested in things than in people, and we architects have often been reminded that humanity is of more importance than inanimate objects. Such criticism is fair enough, and we may well remember that the value of our designs and creations depends on their effect upon those who use them and who are inspired by them. Architecture, unlike other arts, cannot depend on beauty alone. To serve its mission fully it must provide a fitting background for human activities.

"In the theater the painted scene and artificial accessories which simulate the real thing as closely as possible have been considered by actors to be important factors in their success.

"Even the advocates of the new school who favor stern simplicity and extreme breadth of treatment believe that the actor needs the assistance of stage decorations to illuminate the intention of the author and bring out fully the purpose of the drama.

"It seems to me that in our daily lives we have underestimated the influence that our backgrounds, our scenery, exert on us. I know a church that suggests a music hall. I know a theater so somber and gloomy that our spirits are depressed when we enter it. I know a museum of fine arts where it is almost impossible to concentrate one's attention on the paintings and sculpture. These buildings, pretty enough to look at, violate the very first rule of the game. They do not express their purpose, but, on the contrary, nullify and contradict it.

"We have heard a great deal during the past few years about the power of suggestion over our subjective mind. A glance, a touch, a gesture or a word and, we are told, our sub-conscious self responds instantly. Probably this is all true, but who will deny that our objective or every-day mind, acting through the five senses, is swayed by suggestion and strongly affected by its environment? Beauty makes a powerful appeal to us, and we are sensitive to the influence of ugliness. There are degrees of disorder, hideousness and gloom against which no gayety of temperament can prevail.

"Some twenty-five years ago one of our few architectural critics, the late Montgomery Schuyler, said that American architecture was apparently 'the art of covering one thing with another thing to imitate a third thing, which, if genuine, would be highly undesirable.'

"Not only are materials woefully misapplied and combined, but the first principles of design are commonly ignored, and the result is that atrocious buildings abound. Looking further, we find skyscrapers in positions where extreme height is a crime, buildings that swear at their neighbors and have no relation to the streets on which they are built. Villainous 'improvements,' as the real estate fraternity call them, that are the acme of ugliness. It would be interesting, incidentally, to determine how many 'improvements' are required to ruin a neighborhood.

"It has been said that American humor has found its fullest expression in architecture, but as humor is merely one of our by-products and not our acknowledged purpose, we may wonder what is the matter and how it happens. It may be that if it were the custom for the architect to sign his building he would be more alive to his responsibilities and at least strive to do his best. At present architects are generally anonymous, and a building is popularly supposed to be the result of some process of nature and not the product of human thought and endeavor.

"Perhaps the trouble is the lack of a discerning public, and perhaps the press on which the public relies is to blame. Like new books and new plays, new buildings are overadvertised and overpraised without discrimination. We are always assured that the last hotel, department store, theater, or what not, is a marvel of beauty and an ornament to the city.

"I have read columns of praise of a building with a plan so complicated that it was difficult to find the stairs and elevators without a guide. The impossible facade, whose composition was apparently suggested by the kaleidoscope, was so overloaded with bad ornament (spinach, we call it) that it looked like a petrified growth of fungus; but the printed description contained a glowing testimonial to its exquisite charm.

"Surprising combinations of gigantic columns and arches resting lightly on a solid base of plate glass and playfully interspersed with balconies, electric signs, bay windows and balustrades, surmounted by a collection of undisguised water tanks on stilts, are advertised as superlatively beautiful. The public is told this repeatedly and continuously, and apparently believes it.

"American cities are now undergoing vital transformations. As most of them have been planned on the 'rush-hour' principle, their growing pains have been unnecessarily severe. Accordingly the architecture of cities, or city planning, as it has been called, has been forced on the attention of the public.

"The problems arising from an ever-increasing population—new traffic conditions, congestion of people in buildings, and of buildings on ground, unexpected changes of all kinds—are complicated and extremely difficult. This is not work for the amateur. Experience, patient study, and a constructive imagination are needed to increase the efficiency of a city as a working machine and at the same time to secure the beauty that comes from order and fitness of purpose. All this, however, is entirely ignored by our so-called critics.

"Cactus-like growth of towns, aimless streets, absurd extensions of the city map, miscalled civic centers, often not more than irregular open spaces in front of the leading hotel—all are proclaimed in the public prints as brilliant examples of city planning. This is the stuff that forms the public taste. Of real criticism by real critics we have, unfortunately, very little.

"Accordingly, we need not be surprised to find that what we may call our 'best sellers,' types that are repeated with unimportant variations all over the country, are unquestionably the worst examples. They are not architecture at all, even if they look like it and masquerade under its honored name; and for the most part they are not designed by trained architects, but by impostors with no qualifications for their work.

"The work of the architect, however, is more nearly paralleled by that of the dramatist. Plays are built apparently on much the same principle as buildings. The main motifs in both arts must be clear, simple and convincing. The incidentals, the details, explain and assist, but cannot save a defective or weak backbone.

"We are told on excellent authority that a written play is not the play at all, it is only a book of directions for bringing one into existence. Similarly, a set of plans does not constitute an architect's output any more than a copy of his specifications constitutes the finished building."

* * *

Build the Year Round

To architects who have been in practice for a decade or more, the fact that there is a general tendency to extend what was formerly considered "the building season," until it practically constitutes an all-year-round activity, is apparent, says the American Architect. That this general attitude is one of advantage to the client, to the profession and to the manufacturers of building materials is no less obvious. Of course in a country possessing the differences in climate that are to be found in the extremes of the United States (notably California, where there is always more or less building the year round), a general rule cannot be applied, but even in northern latitudes there is now more building and construction work carried on during winter months than formerly; and by the exercise of industry and ingenuity on the part of both architects and builders we expect to see this materially increased from year to year.

It is entirely obvious that any business prosecuted in seasons only, must be carried on in a manner affording greater profit on each individual operation, in order to carry the organization through the season of no work. It follows as a corollary that if work can be undertaken throughout the year it will be performed at less total cost to the owner. What applies to the business of the builder applies, with possibly less force, to the work of the architect. While the cost of professional services would be no more to the owner, under the present system of architects' fees, there would obviously be a greater profit to the architect if his office could be working at moderate and capacity throughout the year.

As to the character of work executed in winter, it would seem that modern practice employing comparatively quick setting cements and methods now well known of protecting work until concretes and mortars have had sufficient time to set, largely overcome the dangers which formerly attached to construction work carried on in cold weather. Moreover, it can be stated that at least half of the work in connection with a large proportion of building construction is done after exterior walls have been completed and the building temporarily enclosed, so that heat can be employed to regulate the temperature where plastering and finishing are being done.

A general movement to increase the amount of work undertaken during the winter months has recently been started by prominent manufacturers of building equipment, who have called attention in forceful manner to the many advantages that accrue from the standpoint of all concerned when construction work is carried on without cessation during the winter months. The time is undoubtedly not far distant when building operations will go forward in all parts of this country with as great energy from December to April as during any other season of the year.

MR. CLINTON DAY, F. A. I. A.

Death of Clinton Day, F. A. I. A.

Clinton Day, one of the best known architects on the Pacific Coast, died of heart trouble at his home in Berkeley, on January 11, 1916.

A TRIBUTE

THE most precious things in life are those which constitute happiness. They are frequently the products of the heart and mind and therefore manifestly beyond the limited realm of word description or other possible means of conveying sensations which we ourselves experience. It is therefore impossible to recount such admirable qualities which Clinton Day possessed and which made him so attractive and beloved. His affiliation with men of his profession abounded in good fellowship and happiness. The spirit which he imbued into the society of men and women generally radiated joyous kindliness, friendship and good humor. His constancy to the high principles established in the canons of his chosen profession is beyond

cavil. Clinton Day will be especially remembered as a result of the happiness which he created in a world which is constitutionally in need of such greater happiness.

L. C. MULLGARDT.

January 17, 1916.

Clinton Day came of distinguished parentage. His grandfather, Jeremiah Day, was for thirty years president of Yale University. His father, Sherman Day, was an early day State Senator from San Francisco, United States Surveyor-General for California, and directed the construction of the first Government highway to the Pacific Coast. He was also one of the founders of the College of California, predecessor of the State University.

Clinton Day was born in Brooklyn in 1847, and came to California when he was eight years of age. He graduated from the College of California, which was then located in Oakland, in 1868, with the degree of B. A. But one member of that graduating class survives, C. A. Wetmore, the vineyardist of Livermore. With the removal of the College of California to Berkeley and its mersion into the State University, Mr. Day did post-graduate work and in 1874 was given the degree of M. A.

In 1875 he was married to Miss Grace Wakefield of Cambridge, Mass., who, with a daughter, Miss Caroline Day, and a sister, Mrs. C. T. H. Palmer, are the surviving relatives.

Mr. Day was a Fellow of the American Institute of Architects. He designed many well-known buildings in San Francisco. He also was the designer of the chemistry building on the State University campus, Berkeley. He was granted the honorary degree of LL. D. by the University in 1910.

Mr. Day designed a large number of very beautiful homes in Oakland, Berkeley and other trans-bay points. His last work was a sun dial for the Class of 1877, which was erected in May, 1915, on the University of California campus.

Referring to Mr. Day's work, Davis' Commercial Encyclopedia, published in 1912, says:

"Viewing the many imposing edifices which are a physical expression of the art of Clinton Day, it is difficult to realize the obstacles to be overcome in making artistic a structure whose sole purpose is commercial. Yet he executed the City of Paris building, the Union Trust building, the Wells Fargo Nevada National Bank building, the Spring Valley building, and the Mutual Life building. Perhaps the most noteworthy product of the genius of Mr. Day is the Stanford Chapel at Palo Alto. This building, known throughout the world as an architectural gem, is considered the crowning glory of the group which comprises the Leland Stanford Jr. University. Mr. Day had been active in architecture for thirty-seven years."

Death of Loren Hunt, C. E.

LOREN E. HUNT, Chief Assistant Engineer of the city of San Francisco and a former lecturer at the State University of California, died January 9th at his home at 2639 Filbert street, San Francisco.

Mr. Hunt was born in Minnesota in 1870. Three years later his parents moved to Santa Barbara, where he lived as a boy. He was a graduate of the University of California, and during his college days was a famous athlete. Following his graduation he became a lecturer on civil engineering at the University.

In 1902 and 1903 he was Assistant City Engineer, going back to Berkeley then as a lecturer until 1909, when he again became Assistant City Engineer for the municipality of San Francisco. In 1911 he was made Chief Assistant. He was a member of the Bohemian and Holluschickie clubs and of several technical societies.

Tribute to the Late Karl Bitter, Sculptor

THE following tribute to the memory of the late Karl Bitter was sent to the distinguished sculptor's family by the members and associates of the Architectural Commission of the Panama-Pacific International Exposition:

Karl Bitter was a great sculptor. He is now of the immortals. While the chronicling of his achievements in art is properly the task of the historian, still it is none the less fitting that we should here recall the signal debt of gratitude owed him by San Francisco. He was appointed Chief of Sculpture by the president of the Panama-Pacific International Exposition at the instance of the Architectural Commission. In this capacity he organized the Department of Sculpture that gave to the Exposition the wealth of decoration that compels the admiration of the world. Karl Bitter became associated with the Architectural Commission early in nineteen hundred and twelve. He shared in all its important deliberations. He exerted a potent influence in its work; and the value of his services to the Commission is beyond measure. He was swift to win the admiration and affection of the architects of the Panama-Pacific International Exposition. To his rare attributes as a sculptor he added a profound sense of duty to his task that was awake at all times. His untimely death takes a great personality from the field of art, and creates a void that will be difficult to fill. We, the undersigned, hereby desire to express the respect, the honor, and the love in which we cherish his memory; therefore, be it

Resolved, That we, the architects of the Panama-Pacific International Exposition, proclaim that in the passing of Karl Bitter, the Fine Arts and the Nation have sustained a great loss. We realize the anguish caused by his untimely end, and to the members of his family we offer our heartfelt sympathy. We recognize and mourn our great personal loss through the premature death of a beloved friend who, in all of his work, exercised a distinctly high moral influence that will endure for the good of humanity.

Signed by

Willis Polk	George W. Kelham	McKim, Mead & White
Ward & Blohme	Louis C. Mullgardt	Carrere & Hastings
Bliss & Faville	Bakewell & Brown	Henry Bacon
Edward H. Bennett	Bernard R. Maybeck	Robert Farquhar

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Architects Chapter Opposes Auxiliary Membership

The Southern California Chapter of the American Institute of Architects has gone on record as opposed to the creation of a new class of associate members in the chapters. The action was taken by the chapter at its January meeting, when a circular from the committee on chapters appointed at the recent Institute convention in Washington came up for consideration.

The question of membership in the chapters has been a source of much contention. The chapters have for a number of years been made up of Institute and non-Institute architects, the latter enjoying all the privileges and benefits of the chapter, but not being eligible to office. In practically all the chapters of the country the non-Institute members have been in the majority and have practically dominated chapter activities.

The Southern California Chapter voted unanimously against the creation of a new class of associate members, but recommended to the committee on chapters that if a class of associate members must be created that associates be required to become members of the Institute within two years instead of five years, as proposed.

* * *

Stockton Theater

Henry Cowell Lime & Cement Company will build a motion picture theater to cost $100,000 on its Weber avenue property in Stockton. The theater has been leased to the Turner & Dahnken circuit. W. B. Thomas of Stockton is preparing the plans.

The Value of Good Architecture in Suburban Communities

By L. WARD PRINCE,
Secretary of the Robert E. Farley Organization, Westchester County.

IF there is anywhere more than another where attention should be paid to artistic and appropriate architecture, it is in the country. City structures are so packed in and frequently so unsightly, that there may be some excuse for losing interest in beautiful lines and attractive surroundings. But suburban homes are primarily for the joy of personal living, and as people quite generally move to the country in order to have grounds and individual houses, it certainly behooves them to select a form of architecture most calculated to bring out the beauty of the natural environment. Even if one cannot afford and does not care for landscape gardening, it is quite evident that some thought should be paid to the placing of the residence on the right part of the acreage, and the apportioning of the house to the shape of the lawn, and the selection of a type of architecture which is suited to the general community.

Highly restricted property always is more satisfactory to everyone of the residents, in the long run. In the east of America there is a predominance of Colonial architecture, naturally due to the inherited traditions of people with New England ancestry. The more ornate and tropical types of residences, however, are coming to us from California, and we now see many stucco houses with red fluted tiles used in roofing, or long, low bungalows, in tropical, wooded places with brilliant foliage.

The greatest stumbling block in the way of really beautiful and satisfactory suburban residences, is the persistence with which laymen disregard the necessity for employing first-class architects. I have met a good many prospective builders of country homes, who have felt that the employment of an architect was a waste of money. They unearth from the hands of some builder or real estate company, a plan which looks well on paper. This is re-hashed and modified to suit their requirements by some unskilled person, without any knowledge or forethought as to what the result will be, architecturally. Speculative builders are very much inclined to follow this method of procedure. Their idea seems to be to put up the cheapest house possible, and when the residence is completed, they wonder why it is not immediately sold.

Any experienced real estate man could tell them many reasons. The prospective purchaser of a country home is impressed first by the exterior. No matter how enticing the interior, he, naturally, does not consider it, until he has been attracted by a structure which pleases him architecturally. The house, which has been re-hashed and thrown together to fit the ideas and pocketbook of the speculator, does not appeal to him as artistic or homelike—the result of expert intelligence or loving thought. This layman looking for a home probably cannot tell just why he does not like the house. Perhaps it is an English type, with a few Colonial features grafted on. He does not realize just why it fails to appeal to him, but the mongrel architecture does not present the stately lines of any one approved type, which has stood the test of various generations of students of architecture. I have seen two houses built side by side—one the creation of a good architect, who has taken into consideration the scenic surroundings, and contour of the site itself, and another put up haphazard by a builder, both equally expensive and comfortable to live in: yet the first one would

sell before completion, while the other would remain a drug on the market.

The unsaleable house, of course, loses money for its owner, in interest and other carrying charges, and soon eats up the amount which he saved in economizing on architect's fees. A house which has been created by a good architect is easily worth the architect's fees in superior trim alone.

Even if the layman in his ignorance purchases the more ignorantly constructed house, he is apt to meet with practical difficulties, and become a dissatisfied purchaser. Frequently, he grumbles because his trim comes apart; his doors and windows do not fit; and his house fails to heat well. When such exigencies arise, the misfortune is usually due to the fact that there was no architect on the job, to see that dry lumber was put in, the house properly framed, and adequate allowance made for radiation.

Except in the case of cheap little structures which would scarcely justify the owner's going to more than a nominal expense, it is safe to say that people building suburban homes should employ a first-class architect. Some loaning institutions fail to charge as a part of the expenses of the building, when fixing the amount of their loans, any architect's fees. I maintain that these fees are just as much an element of value as are the plumbing fixtures, or any other essential feature of the residence. Money spent in hiring extra architectural knowledge is value—real value—and the layman who tries to get away from this expenditure, is very likely to find himself with an unsatisfactory and impractical house on his hands, and not even the solace of having saved money—for he is pretty certain to have lost the amount in some indirect manner, because the house was not efficiently planned and constructed.—Real Estate Magazine.

* * *

The Architect and His Client

IT is difficult to understand the profession of architecture, or at least its practice, from many things that happen, but it is possible they are all susceptible of explanation. The attention of the writer was recently called to a question of practice which would generally be considered quite remarkable. A rich man who desired to build a house asked a young friend to advise him as to a competent architect. The young man directed an architect who has achieved considerable fame, but not a large general practice, the character of his clients and his work justifying the selection, and it was with pleasure that he sent the prospective client to him. The client called upon the architect. After a brief interview the architect asked him how much he contemplated expending on the construction of the house, and was informed that it would cost $25,000. The owner contemplated spending probably $50,000, but he really wanted to play safe. He did not wish to excite the architect, because it was the owner's first $25,000 residence, and it takes a man of considerable means in Chicago to construct a residence of this cost nowadays, and he was timid. The architect politely told him, however, that he would really not care to consider the commission and did not say it, but implied that it was not of sufficient cost magnitude to justify him in taking the work. In the estimation of most people the architect was wrong, but it was a question that he had to decide for himself. It is safe to say that few architects would decline such an opportunity, and particularly at a time when there were indications of uncertainty and possible depression in business, with scores of other architects who would be only too anxious to get it. It is worth while to look at it from a business viewpoint. A commission of 6 per cent, or $1,500, for designing a house, the cost of which was placed at $25,000, is not sufficient compensation

for a man competent not only to design the house in good taste, but also for its supervision, by which the owner will get a complete whole, perfect in every way; probably 10 per cent might not be sufficient.

Designing and constructing a home for people of refinement and means, in which they are probably to live for fifteen to twenty-five years, requires talent and executive ability. A commission of 6 per cent would be too high for some architects or some builders, for the reason that when finished it might not meet the requirements; but 10 per cent would not be too high for a man who could properly fill the bill. The impression prevails, however, that the architect should have accepted the commission and should have designed the house at a compensation to be agreed upon, which could have been arranged very easily. The commission practically came to him and he could have secured ample compensation from an owner of that class. Had the house cost less he might not have been justified in taking the work, this statement being based upon the class of clients for whom he is doing work all the time. Another illustration comes to mind where a business man sent a friend to another architect to get him to design a residence to cost $6,000 to $10,000. This was some years ago, when those houses were more numerous than now. The reason of the selection of this architect was because he had won prizes and had achieved success in the practice of domestic architecture—in fact, was almost famous, yet he had limited practice. The architect declined the work instantly and the owner went to another architect who had also achieved fame as a designer of dwellings and who had a much larger practice than the former and was well pleased with the work. There should be a conclusion of some kind as to these two illustrations. It is believed that the profession of architecture today comes more nearly combining theory and practice, art and business, than ever before; but both of these illustrations are devoid of that combination. It is just as impossible for impracticable theory to be successful as it is for inartistic ability to achieve a success in the designing of a house; a man may be a wonder at statistics, yet he may not be a Harriman, yet a Harriman without the figures would be as grotesque as the proverbial bull in the china shop. What the world wants is more evenly balanced men, people who will not split hairs, but who will go ahead and achieve the possible good as against the impossible best. Then they will achieve a more nearly golden mean between the extremes.—Construction News.

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* *

Causes of Failure in Reinforced Concrete

MANY of the losses suffered through the failure of concrete are due to carelessness and improper design. Common causes of failure are:

(1) Use of green and unseasoned cement as well as poor cement.

(2) Unsuitable aggregates, i.e., inferior grades of sand and stone. It is particularly necessary to avoid using any aggregate that may be handy. The best for the purpose should be chosen. It is also unwise to accept aggregates on the basis of small samples.

(3) An insufficiently graded aggregate, particularly one containing only very coarse material, or one with too much sand or loam. Natural aggregates are risky on account of the variations in the proportion of sand they contain, and should be screened before use.

(4) Dirty aggregate or water containing earthy matter, clay, loam, or strongly colored water.

(5) Carelessness in proportioning mixtures.

(6) Badly mixed concrete, i.e., incomplete incorporation of the aggregate with the cement.

(7) Too much water during mixing, or water carelessly applied, or an insufficient quantity of water to permit the concrete to attain its full strength.

(8) Allowing the concrete to stand until the setting action has commenced and then regauging before use, or using up old concrete.

(9) Setting concrete work on dry foundations and without thoroughly saturating the surface with water.

(10) Excessive ramming or tamping.

(11) Placing concrete in the winter months and allowing the material to become frozen before the cement has attained its final set.

(12) Excessive use of calcium chloride for lowering the freezing point.

(13) Placing concrete in very hot weather when the temperature of the water is around 90 to 100 degrees F., the cement at the same time being improperly seasoned, with the result that the cement gets an initial set in the mixer and is thereby broken when placed in the work.

(14) Excessive troweling or floating of cement surfaces.

This analysis will show that a great number of the failures are due to mechanical incompetency.

Concrete is one of the best and most reliable of building materials when mixed and put in place in a proper manner; where there have been failures in reinforced concrete buildings—or other reinforced structures, for that matter—it has generally been due to one or more of the following causes:

1. Premature removal of forms. Too early removal of forms has been the cause of most of the deplorable accidents in reinforced concrete construction.
2. Insufficient or badly arranged forms.
3. Erroneous design, i.e., errors in calculation or insufficient and poor reinforcement.
4. Mistakes in the construction of columns.
5. Unsuitable aggregate or cement.
6. Poor mixing.
7. Bad workmanship or inefficient supervision.
8. Misplacing or omitting the reinforcement.

—Construction.

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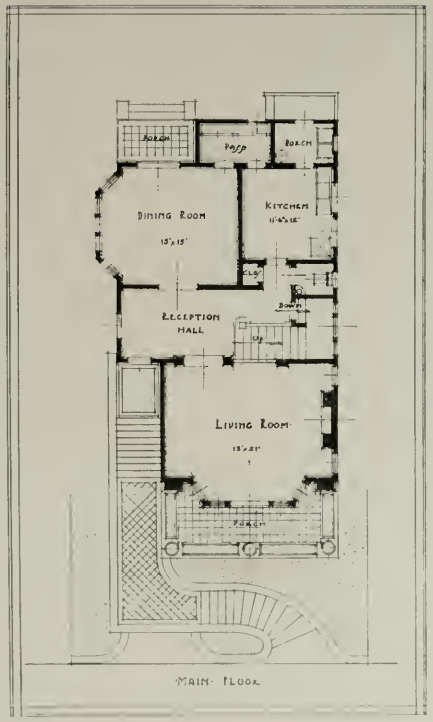
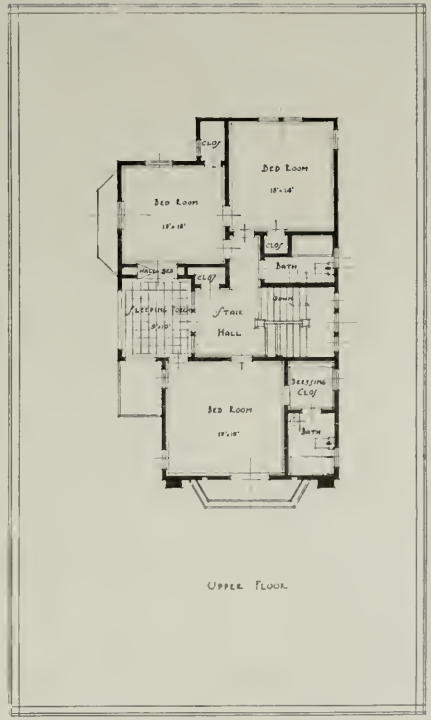
Heiman & Schwartz, Architects

RESIDENCE FOR MR. DUNCAN, FOREST HILL, SAN FRANCISCO
HEIMAN & SCHWARTZ, ARCHITECTS





FLOOR PLANS, RESIDENCE FOR MR. DUNCAN
HEIMAN & SCHWARTZ, ARCHITECTS

The Recent Convention of the American Institute of Architects

THE proposed new constitution and by-laws for the American Institute of Architects, which was submitted at the annual convention held in Washington, D. C., December 1, 2 and 3, was laid on the table for one year. The adoption of the new constitution as drafted would bring about a radical reorganization of the Institute, and the delegates were not prepared to take action upon it at the present time.

John Lawrence Mauran of St. Louis was elected president of the Institute to succeed R. Clipston Sturgis. Other officers elected were: C. Grant La Farge, of New York, first vice-president; Milton B. Medary, of Philadelphia, second vice-president; Burt L. Fenner, of New York, secretary, and D. Everett Waid, of New York, treasurer. New members of the board of directors chosen were Edwin H. Brown, of Minneapolis; B. J. Lubschez, of Kansas City, Mo., and Horace Wells Sellers, of Philadelphia.

Twelve members were elected Fellows of the Institute, as follows: Donn Barber, of New York City; C. L. Borie, Jr., of Philadelphia; Owen Brainard, of New York; George F. A. Brueggeman, of St. Louis; Eleazer B. Homer, of Providence; Warren Powers Laird, of Philadelphia; Guy Lowell, of Boston; Frank B. Meade, of Cincinnati; George S. Mills, of Toledo; Charles H. Prindeville, of Chicago; Frederick A. Russell, of Pittsburgh, and W. H. Schuchart, of Milwaukee.

Prof. Howard Crosby Butler, of Princeton University, noted for his numerous and extended architectural and archaeological exploration tours in Asia Minor, was elected to honorary membership.

President Sturgis in his annual address spoke of the government's effort to seek economy and efficiency by dispensing with trained architectural service, employing only such service as can be obtained by salaries fixed by the government. "If these attempts are due to a belief in the incompetency of the architects who have done government work," he said, "it is our duty to show in other work that this belief is unfounded and that good architects must, of necessity, and as a first requisite, be both practical and economical."

A feature of the report of the board of directors was the statement that there is no class showing so little intelligence in its choice of architecture as those having in charge the erection of new homes for public educational institutions and the erection of school buildings, where particularly the designs of architecture should be of such a character as to instill into the young mind the very things for which architecture stands.

Advertising on the part of architects came in for characterization as "bad taste rather than bad morals," with the recommendation that it be removed from the category of more heinous professional crimes, such as accepting commissions from contractors, faults which are in need of more disciplinary measures than the securing of publicity would seem to call for. The Institute decided to strike the clause prohibiting advertising by architects from the canon of ethics, but it remains in the "circular of advice" relative to the Principles of Professional Practice. Therein it is condemned.

In submitting the report of the Lincoln Highway committee, Chairman Elmer C. Jensen said:

"The work to be done by the Institute in this connection is largely educational, for there seems to be a total lack of appreciation of its esthetic possibilities. The Institute has prevented the erection of inappropriate monuments and has awakened an interest in something beyond the mere construction of the roadbed."

The contention that the government has taken "a distinctive step in retrogression from its standards of architecture as originally conceived by Washington and Jefferson" was embodied in a report of the committee on government architecture, through the chairman, C. A. Coolidge, of Boston, and adopted by the Institute.

The report discussed the tendency of the people of this country to deplore the destruction of the noted monuments of Europe, by reason of warfare, and at the same time losing sight of the fact that the government of this country was constantly losing opportunities to create new structures of architectural worth.

The future destruction of some of those in actual existence, Mr. Coolidge stated, instead of being a criminal act would prove to be a distinct gain to civilization. The plans for the new Interior Department building, now in course of erection in Washington were mentioned as demonstrating a backward step in architecture.

"It is indeed regrettable that the government should absolutely fail to realize its wonderful power for the advancement of the fine art of architecture," continued Mr. Coolidge. "Government buildings, as a rule, occupy a prominent place in the civic centers of our cities, and if this policy is persevered in it will be an insuperable obstacle to artistic development throughout the United States."

Effort after effort, it was stated, on the part of the Institute to co-operate with the Treasury Department officials have met with little or no success. Public buildings today, the committee said, are in the field of politics. The suggestion was made that annual lump sum appropriations by Congress would take the work of government building construction out of politics. The hope was also expressed that the office of supervising architect would soon be filled.

F. L. Ackerman, chairman of the committee on public information, in his report stated that good architecture finds its impulse in social and economic conditions and that it is only through an honest interpretation of these that a vital esthetic expression can exist.

"We have attempted to discuss esthetic questions," Mr. Ackerman said, "to educate our people through the use of forms called beautiful—to import, in fact, a set of esthetic values from Europe. In the meantime we find that our towns and cities are becoming more ugly every day. It is our educational system which should be modified to include in its scope the establishment of the relation between economic, social and political ideals and the consideration of things from an esthetic standpoint."

Senator James D. Phelan of California was one of the speakers at the closing banquet held at the Shoreham hotel. He declared that it will be his pleasant duty to stand as a bulwark to art and architecture.

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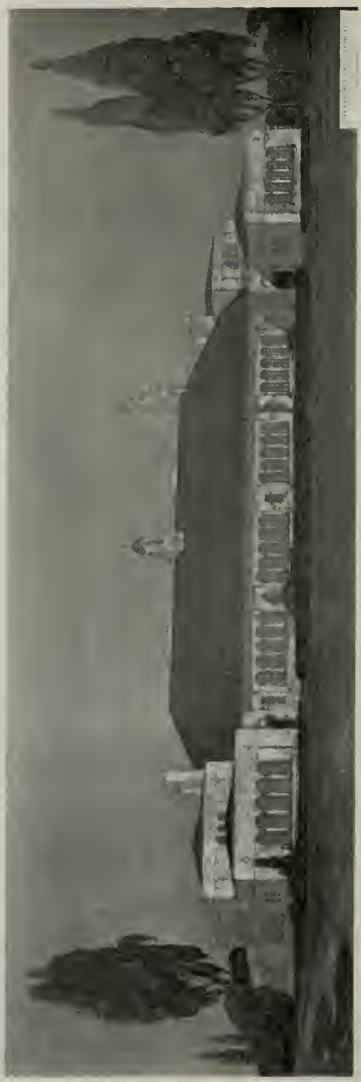
Spanish Country House

Albert Farr, designer of many beautiful residences in San Francisco and the bay section, is preparing plans for a twenty-room Spanish type country house near Hollister for Mr. Washington I. Hawkins, a banker. The house, with its outbuildings, gardens and walks, will probably cost close to $40,000. Construction will be started in the spring. Mr. Farr's recent work will be shown in detail in a forthcoming number of The Architect and Engineer.



DESIGN FOR SCHOOL HOUSE
WOOD' & SIMPSON, ARCHITECTS

DESIGN FOR SCHOOL HOUSE
WOOD & SIMPSON, ARCHITECTS

Willis Polk on the Preservation of the Fine Arts Palace*

I HAVE, to my mind, a very simple argument to present; whether it is right or wrong is for you to decide.

I beg your forbearance and ask you to hear me through. If in the course of my remarks you should feel, in resentment, impelled to anticipate my meaning, I hope that you will exercise a fair amount of self-control; if you should become unduly excited, you may not only defeat my purpose, but you may also deprive yourselves of the pleasure of rendering a just decision covering the merits of an important public question.

Mr. Supervisor Bancroft's resolution, now before you for consideration, may be all right but I object to its preamble. I object to the assumption that it is the opinion of this board that the preservation of the Exposition Fine Arts Palace is impracticable.

I don't object, as your resolution proposes, to the building of an art museum on the opera house lot, in the Civic Center, or in the park for that matter, though the park, especially Golden Gate Park, should in my opinion be retained as a park rather than be devoted to building sites. So should an opera house lot be reserved for an opera house, rather than for an art museum.

I shall not speak against that part of Mr. Bancroft's resolution that is intended to advance the completion of your Civic Center, but I shall, and do protest against any action by this board which may, whether by design or not, tend to destroy the public sentiment that now so strongly favors the preservation of the Palace of Fine Arts.

San Francisco, through the Exposition, has had a taste, a glimpse of art. It has been taught the value of beauty—and, gentlemen, I do not believe that she will willingly be deprived of gratifying the taste thus acquired; I believe that she will demand even more. The Exposition has taught San Francisco the value of beauty.

It is said that the cost of preserving the Fine Arts Palace will be prohibitive. To reproduce it permanently might, but ought not, be prohibitive—to preserve it would cost nothing.

To preserve means, I think, to maintain intact or unimpaired, to keep in the same condition, to guard, keep whole, to secure, to uphold. The antithesis of this means to destroy, abandon, lose, neglect, scatter, spend, spoil, throw away or waste.

To preserve the Palace of Fine Arts means to keep it as it is, therefore the cost would not be prohibitive, it would be nothing at all, or nearly nothing. The Mid-Winter Fair Art Palace, thanks to Mr. de Young, is after twenty-one years, still standing. The Art Palace of the Chicago Fair, despite the snow and ice of twenty-three blizzardly Chicago winters, is still standing. It has been the model and inspiration of the Field Columbian Museum, now building at a cost of more than nine millions of dollars on the lake front of Chicago. Therefore, let us preserve our Palace of Fine Arts as long as possible, six months, six years, or any length of time—maybe, some day it can be made permanent, maybe now it could unless the cost should prove to be prohibitive—nothing, however, ought to be prohibitive to us, and I don't believe anything really is.

By all means resolve to build all the buildings necessary to complete your Civic Center, but do not on that account encourage the destruction of our Fine Arts Palace now. Wait, wait at least until you build something to take its place.

*An address before the Mayor and Board of Supervisors of the City of San Francisco, December 6.

Now as to the proposal to put the Fine Arts Palace in the Civic Center, it can't be done. The Art Palace and the Lagoon (and one is essential to the other, and they both are one)—the Art Palace covers more ground by several blocks than your entire Civic Center.

Of course you can build A building in the Civic Center, but not THE building in question—and that is the question, that is the dream, that is the stroke of genius that has attracted world attention. One touch and the dream is gone.

In all the ages was never a more beautiful building. As well compare Raphael's most immortal Madonna with the voluptuous Stella—the ever enduring Parthenon with the sterile coldness of your uninspiring Civic Auditorium that casts its pall over the future perfection of your Civic Center, and presents its disfiguring back side to one of the finest streets in the world—Market street.

Maybeck's magic pencil has sketched a master piece! Shall we destroy it? No, a thousand times no. Valesquez himself could not copy Raphael, Raphael could not copy Michael Angelo, nor Angelo Phidias. Immortal Phidias, blinded by a blind administration, cruelly blinded with red hot irons, and then imprisoned, cast into a dungeon, his sight destroyed, but his soul exalted, his eyes put out but not his vision, his body imprisoned but not the children of his brain, immortal Phidias inspired your Palace of Fine Arts, you must preserve it.

And while preserving it, you should also preserve our water front, the North Gardens, and the Marina. When Chicago was but ten blocks square the Illinois Central Railroad entered that city, of course by the easiest way, by way of its lake front. Now Chicago and that railway are spending millions to restore that lake front to that city and its people.

New York didn't extend above Fourteenth street when the New York Central first came down the Hudson river shore line, now New York and that railroad are spending millions to restore that shore line to that city and to its people.

In Washington, the Pennsylvania railroad spent thirty years in court, perfecting title to its terminal privileges on the Mall, between the Capitol and the White House—only in the end to cede that land back to our Capital, the Capital of our Nation, and thereafter, at a cost of millions, establish a new terminal. Thus it restored the plan of Washington and a scar marring the beauty of that city was removed.

Are we to let our water front go? The War Department, so it is said, wants a railroad from Fort Mason to the Presidio. Well, let them have it, they can condemn, I suppose, the needed land. But public sentiment can condemn the Government too, for that matter. The point is, if the Government must have this railroad it should agree to keep the right of way thereof parked, to maintain in that case, no switches, or other unsightly disfigurement on its and our water front.

I have seen the famous water fronts of most world cities—Naples, Genoa, Venice, the Quays of Paris, the Thames Embankment in London, but no where is there such a prospect as ours. The Marina, the bay, the Marin hills, are they not beautiful? Think of them—shall we allow any of them to be lost to us? Shall we allow it to revert back to the shambles, shacks and quagmires of its former condition?

The day will come when San Francisco, like Chicago, New York and Washington will realize the value of its water front. The State Board of Harbor Commissioners will be asked to restore their part of it to us. The belt line railroad will be put underground.

How strange, how quiet, how complacent we are—if the State blankets our water front with a belt line, the municipality threatens to crosscut our park, or the War Department grab our Marina, no one rises to object.

What a racket would ensue if a private corporation tried to do such a thing.

In this country we have education, perhaps in a higher degree than elsewhere, and a consequent yearning for better things. Throughout the country vague discontent with public work prevails, the sort of discontent that, with our people, always precedes improvement. Now the millions that have seen our Exposition, have understood at once what is needed to effect a change. They have seen that though a pool, a grassy bank, or a building might be individually beautiful, each may appear ugly in the midst of inharmonious surroundings, and moreover that no one of them by itself can be as beautiful as a union of them all. The Fine Arts Palace has proved this, the people at large realize their discovery, and are delighted.

Now is there a concert of action in opposition to this awakening? Is there a secret council that heeds not public opinion except just before an election?

If not, why have the smiling, smirking general contractors, who seem to look so satisfied, and so prosperous, declared against it?

Why has the local Chapter of the American Institute of Architects passed a milk and water resolution damning with faint praise the preservation plans?

Why is it said that these buildings are unsafe? Those who say it ought to know—if true, they must feel vastly relieved that countless thousands have swarmed those halls without injury to life or limb. If it is true that the foundation piles of the Fine Arts building are already rotten, then this building, beautiful as it is, should be closed at once, 'twould, as proposed, be a crime to let it remain open till next June. But is this true? I don't believe it. I am sure that structurally, practically all the Exposition buildings are over strong, stronger than most buildings erected in the city since the earthquake and fire, certainly vastly stronger than the sheds of the Meiggs Wharf which so staunchly withstood the storms, gales and hurricanes of fifty winters of our glorious climate.

Then again, why does the distinguished president of the Exposition seem to be against this plan?

Is there a concert of action? Is there a secret council? Is there a program? I hope not.

Also there is my friend, Mr. de Young, publisher and proprietor of the Chronicle, one of the first sponsors of preservation, whose news columns, front page, editorial columns and Sunday supplement took such a great part in creating the public sentiment that now demands preservation. Why has he deserted the cause? Why does he sit idly by while the opposition grows? Oh! Michel—Why dost thou sulk in thy tent? Art thou like unto Achilles of old? Dost thou not hear the din of battle? Wouldst thou let the battle rage and the empire fall? Gird thou thy loins, O Michel, take unto thyself a horse and dash again to the front, like the doughty warrior that thou art. Dost thou not know that the voice of the prophet, harkening up from the most dismal depths of the corridor of time, hath revealed that the destiny of a people, that the fame of a city, must ever be inseparably coupled with beauty?

Pericles, not for art's sake, but as a matter of pure statesmanship, made Athens beautiful, and Greece for more than 2,000 years has been collecting the dividends.

Now then, Mr. Mayor and gentlemen of this board, there cannot be any argument about the wisdom of beautifying our city; 'twould be a waste of time to refer to the fame of Paris and its beauty, to recall the lamentations of the world following the fall of the Campanille of Venice, or to refer to the howl of rage accompanying the recent destruction of the great cathedral at Rheims. Are we to commit such a crime? Are we to deliberately destroy

our Palace of Fine Arts? Are we, with one stroke of the pen to undo the rare, almost never occurring, seldom recurring, God given, touch of genius that signalizes this palace, as was signalized the Parthenon, a God-chosen expression of the genius of man? If either the Parthenon, the Campanille, or the Cathedral were in San Francisco would any one doubt that its attractive presence would not be of great commercial value to us? Would any one doubt that it would not improve real estate values in all parts of our city? I don't think that even Mr. de Young would doubt it.

Of course, to preserve the Palace of Fine Arts we must preserve the land upon which it stands, the Government with its vast acreage in the Presidio will not begrudge us these few blocks. Then preserve also the North Gardens and the Marina—the more land withdrawn from private use the more valuable the remaining land in all parts of the city will become. Therefore the great thing to do, in my opinion, is to lay the foundation for this preservation scheme now by immediately acquiring the land.

And now, your Honor and gentlemen of this Board of Supervisors, do not in this let your action result in a mistake as great, if not greater, than the first act of your official career—I refer your Honor to the day of your inauguration, four years ago, when you adopted the indefensible plan, and the mistaken location of our Civic Center.

I refer to this in all kindness, with a heart only pulsating with emotions for our city's good.

At the foot of your throne, I plead in humbleness, and beg to remind you that you have the power, and I trust the judgment, to act in this case wisely.

The power is yours.

The responsibility is yours—it is great, it is grave, may God in His benevolence lead you to see the light.

I thank you,

WILLIS POLK (signed.)

* * *

New York's Most Costly Apartment House

Some time ago we presented in these columns a typical plan of an apartment house in New York City, the rental of a floor in which was given as $25,000 a year. The latest addition to the colony of apartment dwellings is now in course of construction on one of the most desirable corners of Fifth avenue, and the rental of some of the suites in this building is placed at $30,000 per year.

It is a twelve-story structure and, according to the builders, will, when completed, "be the last word in apartment house construction." It has been designed by Architect J. E. R. Carpenter, and the drawings show three types of apartments—one occupying the entire floor consisting of about thirty rooms with nine bath rooms; a duplex apartment of nineteen rooms and seven baths, and also a simplex apartment of from fourteen rooms up, having five or six bath rooms. In each suite the foyer will open into a large gallery or salon 47.6 x 13 feet in area, thus giving an impressive entrance. The living rooms are 20 x 30 feet in area, and there will be libraries, conservatories and other features, making the entertaining space unusually large. The living room, the library and some of the sleeping rooms have open fireplaces and special attention has been given in providing ample and comfortable servants' quarters.

The building will represent an expenditure of approximately $1,000,000, exclusive of the land, and we understand the schedule of rents varies from $10,000 for the small simplex apartments to $21,000 for the duplex apartments, while approximately $30,000 will be the price of an entire floor.

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THE SKELETON IN THE CONTRACTOR'S CLOSET

What constitutes a "safe and sane" addition to the cost of materials and labor in a construction estimate? Experience has shown that this should be at least 15% for "overhead" and 10% for profit. The general contractor who allows less than 15% for office and administration outlay; for plant and installation charges and for operating expenses will find that he is "out of pocket."

The "overhead" includes such items as repairs and replacing of equipment, interest on plant investment, wear and tear of machinery, etc., waste of materials, unproductive labor, errors in taking off quantities, "extras" not allowed by architect or owner, together with various other unforeseen and extraordinary additions to the customary fixed charges.

Why should not the architect take off the quantities and add, say, cost of labor and 25% for overhead and contractor's profit? This would form a fixed price which the owner would pay for his building. Contractors wishing the job at this figure would then all be considered with reference to their standing, character of equipment, reputation for doing honest work, etc., and there would be fewer "misfits" and controversies.

REDUCE INSURANCE RATES AND OWNERS WILL BUILD BETTER

That the danger of conflagration can be practically eliminated from the congested centers of cities by protecting the buildings and contents against fire through the complete installation of automatic sprinklers, and protection of all windows and other openings by wired glass, fireproof doors, and metal sash, was the conclusion drawn by Superintendent of Insurance Rufus M. Potts, of Illinois, in an address made before the National Convention of Insurance Commissioners in Monterey, California, recently. "The conflagration hazard of congested districts," said Mr. Potts, "is an 'epidemic of fire' and can be more effectually eliminated than was the

yellow fever danger, and the every day fire loss can be as much reduced by preventive measures, as deaths from diphtheria by the anti-toxine treatment. Conflagration breeding conditions exist by reason of insufficient and unenforced state and municipal laws, as well as on account of the failure of the insurance 'Combine' to encourage protective measures by allowing adequate reduction in premium rates therefor. The 'Combine' also actually countenances fires by permitting a general system of over-insurance.

"While there are a number of minor measures, each capable of contributing something to this end, there are two which are financially practicable and agreed by competent authorities to be of paramount importance. These are: (1) The protection of all elevators, air shafts and floor openings by fireproof doors or wired glass and a similar protection for every exterior opening; (2) the installation of a complete automatic sprinkler equipment in every building in the congested district."

Mr. Potts analyzed conflagrations from an engineering viewpoint, showing how, in a conflagration, the fire is not communicated alone by the flames and burning brands, but chiefly by the so-called "hot blast" action resulting from the ignition at some distance ahead of the fire of superheated combustible gases roasted out of burning material drifted with the wind into buildings through unprotected openings, where sufficient oxygen for combustion is found.

Applying this knowledge to the prevention of fires, it is not a difficult matter to understand how the protection of all openings in buildings with fireproof shutters or wired glass windows, together with the provision of automatic sprinklers on the inside, will absolutely prevent the spread of a conflagration, either by deflecting these combustible gases upward, or, if they should gain access to the interior of a sprinklered building, by the mass of water spray extinguishing any resulting fire and also cooling the combustible gases so that spread of fire through them will cease.

If the insurance people will take the initiative and make it worth the owner's while to use fireproof shutters and install sprinklers, we may hope to see Mr. Potts' suggestions carried out. But so long as the owner is compelled to pay heavy insurance assessments just so long will he direct his architect to keep down the cost of his building.

Make the reduced rates an incentive to the builder to build well. Give him to understand that the saving on account of reduced insurance premiums would be so great that it would pay for the expense of installation in a few years, and the saving of life and property, and the prevention of loss through interruption of business would be far greater than is possible to replace by mere insurance.

Portland Auditorium Finally To Be Built

Portland's Auditorium is actually going ahead. Bids have been taken, and a contract for construction will be awarded soon. The City of Portland authorized a bond issue of $600,000 at an election held in 1911, to provide funds for erecting the proposed building and installing equipment and furnishings. The site selected occupies a full block bounded by Second, Third, Market and Clay streets. The plans, as adopted, were drawn by J. H. Freedlander, of the architectural firm of Freedlander & Seymour, New York City. This choice of architects was made after competitive plans had been submitted by architects generally. It is anticipated that practically all of the authorized $600,000 will be expended on the building, equipment and furnishings. The Portland architectural firm of Whitehouse & Fouilhoux represents the New York architects and will supervise the construction.

The structure will occupy a ground area 200x200 feet, and is to have a seating capacity of 5,150 persons. The substructure, serving as a foundation for the main walls, will be of reinforced concrete, resting upon solid earth and gravel. The concrete foundation walls will come up above street grade to the main floor level. The main walls of the building will be constructed of face brick and terra cotta, with a backing of hollow clay tile, giving an exterior facing of gray color.

With the Architects and Engineers

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San Francisco Apartments

W. G. Hind has three large apartment houses on the boards. Contracts for another fine building for Dr. Clyde S. Payne, to be erected on Hyde street, south of Bush, San Francisco, have been let. The structure will cost $30,000. A new feature will be carpeting the entire house, which plan the owner has found to be a material aid in renting his apartments.

San Francisco Society of Architects

Regular Meetings Second Wednesday of Each Month

PRESIDENT	FREDERICK H. MEYER
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COMMITTEES 1915-16

Education:—John Bakewell, Jr., chairman; B. R. Maybeck and W. C. Hayes.

Entertainment and Meetings:—J. Harry Blohme, chairman; John Reid, Jr., and Geo. W. Kelham.

Membership:—Charles Peter Weeks, chairman; J. Harry Blohme, John Bakewell, Jr., Herman Barth and Frederick H. Meyer.

New Officers and Committees, Portland Chapter, A. I. A.

Portland, Oregon, Chapter, A. I. A., has elected the following officers for 1916:

William G. Holford, president; Chester J. Hogue, vice-president; Jos. Jacobberger, secretary; J. A. Fouilhoux, treasurer; Albert E. Doyle, trustee; F. A. Naramore, trustee.

The president has appointed the following chairmen of committees:

Municipal Plans and Affairs—Folger Johnson, chairman.

Building Laws—J. A. Fouilhoux, chairman.

Competition—Chester J. Hogue, chairman.

Legislative — Folger Johnson, chairman.

Publicity—Jos. Jacobberger, chairman.

Entertainment—H. G. Beckwith, chairman.

Membership—A. H. Smith, chairman.

Education—Ellis F. Lawrence, chairman.

Professional Practice — A. E. Doyle, chairman.

Quantity Survey—Chester J. Hogue, chairman.

San Francisco Chapter Committees

The president of San Francisco Chapter, A. I. A., has appointed the following working committees for the year 1916:

Competitions — William B. Faville, chairman; John Galen Howard, William Mooser and Sylvain Schnaittacher.

Housing Committee—John Bakewell, Jr., chairman, and Bernard J. Joseph.

Legislation—Edgar A. Mathews, chairman; William Mooser, Mathew O'Brien and John J. Donovan.

Committee on Relations with Contractors' Affairs—G. Alexander Wright, chairman; Henry H. Meyers and Morris M. Bruce.

Committee on Relations with Home Industry League—E. J. Krafft, chairman (to appoint his own committee).

Committee on Relations with Chamber of Commerce—J. Stewart Fairweather, chairman, and C. P. Weeks.

Committee on Relations with Civic League—Sylvian Schnaittacher, chairman (to appoint his own committee).

Committee to Follow Up Matter of Competition for State Building—William Mooser, chairman; Fred H. Meyer, Edgar A. Mathews and Clarence R. Ward.

The Last Word in One-Story School

John J. Donovan, formerly City Architect in Oakland, has been selected to prepare plans for a new school house at San Leandro. Bonds amounting to $100,000 have been voted by the district and sold for a premium of nearly $4,000. Mr. Donovan says the new school will be the last word in one-story school house construction, solving all the problems that heretofore have confronted the architect of the single-story school. There will be two buildings, one containing class rooms and the other an assembly hall. Construction will probably be hollow tile walls and stucco finish, with clay tile roof.

Institute Places Ban on Competition

The San Francisco chapter, A. I. A., has placed its ban of disapproval on a competition being held in Arizona for a $200,000 court house at Prescott. The competition closes February 24. A fee of 5 per cent will be paid the successful competitor. There will be a second prize of $500 and a third prize of $250. The building is to be a two-story and basement fireproof structure and is to contain 700,000 cubic feet. The cost is limited to $200,000. Further information may be obtained from R. T. Belcher, clerk of the board of supervisors, Prescott, Arizona.

Architecture of Utility Structures

Southwest Contractor, of Los Angeles, in reprinting from the November Architect and Engineer part of Mr. I. C. Frickstad's article on the "Architectural Features of the Pacific Gas and Electric Company's Buildings," made the following interesting comments:

While many persons may not be willing to accept literally the declaration that "utility is art," the assertion that art and utility may go hand in hand will not be challenged. Indeed, one can find abundant proof if he chooses to look for it that utility may be enhanced by art in practically every sphere of operation, despite the altogether too common belief that some things to be most useful must be really ugly or grotesque. This is particularly true of architecture, which is one of the highest forms of art because it is so closely allied with utility.

Hideous factory buildings, warehouses and utility buildings of all kinds may be pointed out as evidence of commercial progress in a community, but how much more emphatic they would be if they were designed and built with some regard to the eternal fitness of things.

Architecture is one of the oldest forms of expression and its mission is just as great and just as important as it has ever been. An intelligent application of architecture in the industrial world can be made just as effective as it is in domestic, religious and other fields. Modern commercialism does not wait on art. It breeds and often seems to thrive on makeshifts. But as industrial activities take on a permanent form there is no excuse for neglecting a rational application of art to all utility buildings, whether they be private or semi-public in character or ownership.

The commercial world is now awakening, but all too slowly, to a realization that properly designed and sightly utility buildings are a real asset, for they are mute evidences not only of permanence and stability but also of intelligent operation, and they inspire public confidence.

Concrete Apartments for Los Angeles

Architect Myron Hunt, 1017 Hibernian building, Los Angeles, has been commissioned to prepare plans for a fireproof apartment building to be erected on the Euclid avenue side of the Maryland hotel grounds at Pasadena for T. N. Jamieson. The building will be operated by the Hotel Maryland management in connection with the hotel. Plans will not be ready for contractors until March 1st next and work will be started April 15th. The building will be 75x150 feet, but for the number of stories has not been determined, although it will probably be five or six stories. The construction will be reinforced concrete with plastered exterior and composition roof, conforming in design to the hotel building.

Earliest Building Tips

Advance building news is in sharp demand these days, and The Architect and Engineer aims to supply its advertisers with such information at all times. But it is only once in a great while that we can offer such a prime grade of first inception tip as a country weekly which came to us a few days ago. It stated that a citizen was contemplating planning to build.

What lots of our live wires want to know is when a man begins to expect that he may think of building!

Personal

P. Righetti, formerly of Righetti & Headman, architects in the Phelan building, San Francisco, is occupying new offices on the fifth floor of the same building. They are much lighter and more conveniently arranged than the old offices.

J. J. Backus, city building inspector, Los Angeles, has been elected an associate member of the American Institute of Architects. Mr. Backus has been a member of the Southern California Chapter of the A. I. A. for a number of years.

Fred W. Drake, architect of Loma Linda, California, was a recent visitor to San Francisco. Mr. Drake designed the Loma Linda sanatorium. St. Helena sanatorium, and the College of Medical Evangelists.

Messrs. Garden & Kuhn, architects in the Phelan building, San Francisco, have dissolved partnership. Mr. Garden retains the old offices.

Sacramento Expects Building Boom

By the decision of the State supreme court, upholding the validity of the Capitol Extension Site bonds, the city of Sacramento expects to reap great benefit and the Sacramento Bee predicts the expenditure of over $2,000,000 in that city in the next year or two for labor in new construction work. This is in addition to money that will be spent in new State buildings. The Bee claims that 250 new homes will be built, at a cost of $1,000,000. These homes will be required to house the State employees whose residence address will be transferred to Sacramento from other points of the State upon completion of the new State buildings.

City Planning for San Rafael

Charles Henry Cheney, city planning expert, has been retained by the city of San Rafael to prepare a report on the feasibility of a general plan of civic improvement for that city. It is said Cheney's recommendations, to a great extent, will guide the City Commission in making certain proposed changes in the streets, and also incorporating a beautification scheme. Among other things, it is probable that an extensive city playground system will be developed.

Another San Francisco Theater

Mathew O'Brien, formerly of O'Brien & Werner, who designed the Tivoli theater in San Francisco, has prepared plans for a $200,000 theater to be erected on the site of the old Y. M. C. A. building at Ellis and Mason streets. It will seat 2200 persons and will be Class A construction.

Architectural Competition

An architectural competition of the most practical kind will be held in connection with the First American Complete Building Show, in Cleveland, Ohio, February 16 to 26, under the direction of the Cleveland Chapter, A. I. A., in cooperation with the Chamber of Commerce, Cleveland Art Association, Builders Exchange, Society Advocating Fire Elimination and other civic bodies.

The competition is for a workingman's home to cost not more than $3,000 complete, exclusive of land and embellishments. There are seven prizes, the first being $200. The contest is open to all materials and any practicing architect in the United States.

Rules of the competition call for six rooms, with basement under entire house. It is the aim of the committee to obtain designs that are in every way practical; and awards will be made upon this basis.

All drawings must be in by February 1st.

Instructions regarding the contest may be had by applying to The Complete Building Show Company, 356 Leader-News building, Cleveland, Ohio.

Architect of Fraternity House

Editor The Architect and Engineer:—

A statement appears in your December issue that W. H. Ratcliffe, Jr., has made plans for a fraternity house in Berkeley for the Delta Deuteron society. The house referred to is, no doubt, the house being built by the Delta Deuteron Building Association, to be occupied by the Theta Delta Chi fraternity.

The statement regarding Mr. Ratcliffe's connection with the building is entirely erroneous, as he has had nothing to do with the preparation of the plans. The entire credit for the plans is due N. W. Shaw, the designer, and William C. Hays, consulting architect.

I will appreciate it if, in justice to our architects, you will make this correction in your next issue. Yours very truly,

DELTA DEUTERON BLDG. ASSN., by
ERLE L. COPE.

Appreciation

Dec. 20th, '15.

Editor The Architect and Engineer:—

Congratulations on your bully December number, it is full of meat. I was especially interested in Mr. Simpson's article. He is hammering away at something I have been trying to put across for the past ten years—success to his efforts!

The "City Beautiful" article by Mr. Whitehouse was also good.

The season's greetings to you all.

Sincerely yours,
W. D. COOK, JR.
Marsh-Strong building, Los Angeles.

In the New City Hall

On December 28 Mayor Rolph moved into the new San Francisco city hall. The other city officials intend to remain in their present quarters until the building is entirely finished.

An informal dedication of the building was held, addresses being made by Supervisor Ralph McLeran, Architects Arthur Brown Jr. and John Galen Howard, Arthur Arlett and Mayor Rolph.

A Word From Paul Cret

Professor Paul P. Cret, of the Architectural School of the University of Pennsylvania, who is with the French army in Belgium, sends an occasional letter to friends here in the profession. The impression conveyed by Mr. Cret's letters is that life in the trenches is depressingly monotonous. He speaks with some feeling of his memories of pleasanter associations here in the United States, and refers somewhat quizzically to his chances of returning. It is evident from Mr. Cret's notes that the trench warfare on the Eastern front has become largely a question of resources, the progress made by the contending armies within months being so slight as to be almost negligible. One gains a rather clear insight from Mr. Cret's interesting observations into the astounding scale on which the present war is being conducted—its titanic proportions and amazing equality of resource.

One recalls, almost automatically, says the Builder's Guide, the assertion made early in the war, that the contest would in the end prove to be economic rather than military, and that it would be determined by its bankers rather than by its warriors.

More About Los Angeles' Big Market Terminal

The last of the deeds for property involved in the proposed new wholesale and market terminal project at Los Angeles have been placed in escrow and the work of carrying out the enterprise will begin as soon as the certificates of title to the property have been delivered. The new wholesale and market terminal will be located on a 35-acre tract bounded by Seventh street, Central avenue and Alameda street. Preliminary plans for the buildings have been prepared by John Parkinson, Security building, Los Angeles. The new corporation, which will be known as the Los Angeles Market and Terminal Company, will absorb the present Los Angeles Public Market Company. All the terminal buildings will be reinforced concrete construction, the market buildings to be two stories and the jobbing houses six stories. Several million dollars will be expended.

Automobile Expansion

There promises to be considerable building on the Coast this year in automobile circles. The Ford company will erect a five-story reinforced concrete addition to its San Francisco assembling and service building, and the Willys company will provide an entire new plant for handling the Overland cars. This building will be erected on the site of the Tabernacle on Van Ness avenue. The Chevrolet company will spend $200,000 in the construction of a modern fireproof plant in Oakland.

New Hotel for Catalina

Carroll H. Brown, Stimson building, Los Angeles, is preparing plans for the new Metropole hotel and other buildings to be erected at Avalon, Catalina Island, by the Banning Company, to replace the buildings recently destroyed by fire. Mr. Brown has been the architect of all the buildings erected by the Banning Company for a number of years.

State Engineer Takes Exception

State Engineer W. F. McClure wishes us to announce that no scheme of any sort has as yet been proposed by his department for the proper treatment of the foot of Market street, San Francisco, public press reports to the contrary notwithstanding.

Addition to Bank Building

The Fugazi bank at Columbus avenue and Montgomery street, San Francisco, has had plans made for a four-story reinforced concrete addition, to cost in the neighborhood of $70,000. Italo Zanolini is the architect.

To Build One Hundred Cottages

Mr. Cleveland Dam, the owner of a beautiful tract of land at El Monte, Mill Valley Junction, is planning to erect one hundred modern cottages and bungalows on his tract the coming year, according to the San Rafael Independent.

Architectural Club Officers

The annual election of the San Francisco Architectural Club was held January 5th. The newly chosen officers are Charles P. Weeks, president; A. Williams, vice-president; John F. Beuttler, secretary; William Helm, treasurer.

San Francisco Residence Alterations

Charles Peter Weeks, the San Francisco architect, is preparing plans for extensive alterations and additions to the F. W. Bradley residence on Broadway near Devisadero street, San Francisco.

Officials Washington State Chapter, A. I. A.

The annual meeting of the Washington State Chapter, American Institute of Architects, was held at the club house of the Seattle Architectural Club, with an attendance of twenty-three members together with a large number of the members of the Architectural Club.

The following officers for the present year were elected:

President—Arthur L. Loveless, Seattle.

First vice-president—Joseph S. Cote, Seattle.

Second vice-president—George Gove, Tacoma.

Third vice-president—Albert Held, Spokane.

Secretary—Daniel R. Huntington.

Treasurer—Ellsworth P. Storey.

Member of the Council—James H. Schack.

Big Warehouse

G. A. Applegarth, architect, has completed plans and taken bids for a four-story reinforced concrete and brick warehouse to be erected at Bryant and Second streets, San Francisco, for the General Electric Company. The building will be 126x160 feet, mill construction, and will cost from $80,000 to $100,000.

Elect New Officers

The Engineers and Architects Association of Los Angeles has elected the following officers for 1916:

President, A. H. Koebig; first vice-president, A. S. Bent; second vice-president, Ira H. Francis; directors, H. L. Smith, J. J. Backus, G. P. Robinson, A. C. Martin.

Moving Picture Theaters

B. J. Joseph, formerly of Lansburgh & Joseph, has prepared plans for two moving picture theaters to be erected in San Francisco. One is for the Royal Theater Company and the other is for A. Goldberg. The first named will be built on the north side of California street, west of Polk, and will represent an outlay of over $50,000.

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"Do It Electrically"

Special Articles this Month by Chas. T. Phillips, Walter R. Moulton, Geo. A. Schneider and V. A. Kuehn.

Next month—"Indirect Lighting" "Electricity in the Home."

Minimum Wiring and Maximum Lighting

By CHARLES T. PHILLIPS, C. E.*

IN designing the structural parts of a building, the architect considers the ultimate use of the different portions of the structure and assumes that each of these portions will be subject to certain load stresses. This method of considering the future use of the building has lowered the cost of building structures considerably, as compared with the hit-and-miss method employed several generations ago, when massive structures were erected, the unit cost of which would be prohibited in the present age.

If the above method has proven satisfactory and structural engineering has been the means of lowering the cost of building, why not apply the same rule to other features of building and thus obtain a complete structure, capable of handling the maximum requirements at a minimum cost?

Building owners are looking for a high rate of return from their investment, and, with this point in view low first cost and low maintenance are two important factors. Low first cost in the wiring and illuminating equipment of a building, whether it is a bungalow or a million-dollar business structure, can be obtained only by following engineering principles. The rule-of-thumb methods so commonly used, of marking a certain number of lights at various outlets, results in a system in which a large portion of the equipment is never used and future changes require additional cost that might have been saved in the first installation. At least 95 per cent of buildings are equipped with an installation of wiring and illumination that is inadequate. The result is that the owners or occupants are frequently compelled to make additions after the building is completed, and ultimately from 40 to 70 per cent of the capacity of the installation is an idle investment on which the owner is paying maintenance, depreciation and interest.

A large number of cases of this nature could be cited, but only one will be mentioned. A certain large business house entered into a long term lease with an owner on condition that a building would be erected to meet the needs of that particular business. Plans were prepared and accepted by the prospective tenant and, as the building neared completion, the tenant found that the wiring and lighting did not fit his requirements and the result was that he was compelled to spend over two thousand dollars to bring that portion of the building up to his original requirements. At the same time, a considerable amount of the first installation has never been used and represents a dead investment of about three or four thousand dollars.

It is frequently said that a certain margin should be allowed for unforeseen requirements that may arise later, but, during the writer's twenty years' experience, he has never seen an installation planned so that it met the future growth.

The selection of lighting fixtures and lamps, which is made after the wiring contract is let, is responsible for the misfit between the wiring and the fixtures. In order to obtain the required amount of light with a minimum amount of wiring, the illumination should be estimated and the lighting fixtures designed by a competent designer before the wiring is planned. By a competent fixture designer is meant one who appreciates and can utilize the laws governing efficiency in illumination. Fixtures that are designed with regard to the aesthetic taste only can not be expected to furnish satisfactory lighting or protect the tenant against a large current bill. In certain types of buildings it is frequently necessary that a number of the lighting fixtures be designed without regard to high efficiency, but the balance of the lighting should be carefully planned along scientific lines.

There is a general impression that the approval of the inspector is a guarantee of first-class construction. Neither the fire underwriters nor the local inspection

*Pacific building, San Francisco.

bureaus maintained by the municipalities require that the construction shall be any more than safe from fire. The results may be very disappointing to the owner, yet the work may conform to all rules and requirements of the inspection bureaus.

Owing to keen competition in all lines of business, the building owners are scrutinizing every item which enters into building construction, and the large amount of publicity which has been given electrical appliances, has created a demand for more detail and thought in the preparation of electrical plans and specifications.

An Electric Refrigerator

ELECTRICITY has become a factor in the working of the modern refrigerator. An electric motor-driven refrigerator has been developed in Chicago. It is claimed by the manufacturer that proper cold storage temperatures are impossible through the use of ice. Eggs require 29 to 31 degrees, and beef 33 to 38 degrees. The temperature in the average ice box in hot weather is from 56 to 60 degrees. In the new electric ice box, the inside of the cold hold has four shelves. The first is 16 inches from the floor, the second 13 inches above that, the third 10 inches above the second, and the fourth is inside of the tinned copper freezing coil. This gives a very cold shelf at the top, where ice can be made, and ice cream, oysters, fish, poultry, or anything that is to be frozen can be stored. Nothing will freeze on the shelf below this coil, and it is handy for the storage of fruits and vegetables, butter and eggs, and other things used frequently. In the lower part the shelves are for water, watermelons, and big things on the bottom. On the top of the cabinet is a tinned copper coil surrounding an ice machine of a low pressure system, driven by a small electric motor by means of round belts. It can be operated by merely turning on for colder temperature, and off when sufficient low temperature has been secured. It uses no water, and it is necessary to pay for nothing but electric current, which is upward of $1.80 per month. By the use of this novel ice box, the cost of refrigeration is claimed to be no more than a cent an hour. In average weather, the machine need be run only a couple of hours, morning and night.

Lumber Goes Up

The price of redwood lumber advanced during the early part of the month $4 per thousand. It is said the price will climb still higher by spring. Other building materials are expected to advance in price very shortly—a sure indication of good times. Moral: Build now.

An Effective Electric Crossing Sign

By WALTER R. MOULTON*

"SAFETY FIRST" has become a watchword in all parts of the country. Large corporations are doing everything possible to protect the public, their employees and themselves. The public service corporations especially have the problem constantly before them. The position of the railroad is probably hardest of all because the responsibility is seldom more than fifty per cent on their side.

It is only recently that the Long Island railroad has made a direct appeal to the public to be careful when crossing a railroad and have endeavored to impress this upon the public at night as well as day time by illuminating a large painted sign.

The Northern Central Railroad of the Pennsylvania system was confronted with a dangerous crossing at Seminary avenue, Lutherville, Md. This road is an important suburban highway from the York road west through Lutherville to Green Spring Valley. For over three blocks there is quite a steep down-grade, then the railroad crossing, from there on the road goes up-grade again. Trees, hedges and buildings interfere with the clear view of the railroad and a person unfamiliar with the conditions would invariably get quite close to the crossing before noticing it.

The railroad realized that this was an extremely dangerous condition and placed a standard railroad crossing sign about 350 feet away on the right hand side of the road and this served sufficiently well in the daytime. Next, in order to make this effective at night, a standard street bracket was placed on the same pole with the crossing sign, hoping that this would make the sign prominent at night. There was not sufficient concentration of light, however, and this did not prove very effective. The final solution of the problem is shown on the accompanying illustrations.

The standard street light was removed from the bracket and a 30 degree angle fitting used. Below this hung the regular

*Illuminating Engineer, "The House Electric," Baltimore, Md.

Day and night views of a railroad crossing sign. A special holder is fitted to a street series socket which carries a gloss reflector bright red on the outside and white opal on the inside. A sixty candle-power street series lamp is used.

street series socket with a special 3¼-inch copper reflector holder. Then a 12-inch dome reflector was secured having a bright red glass outside and cased with white opal glass inside. This was hung from the special holder and a 60 candle-power street series lamp installed. The result is effective to the highest degree.

In the daytime the curiosity of the automobile driver is aroused by the bright red reflector and his attention drawn to the crossing sign. At night, however, this warning signal becomes imperative. It would be entirely impossible for a person with normal eyesight to pass by on the road without being conscious of the brilliant red light from the dome reflector and also thoroughly understanding that there is a railroad crossing 350 feet distant. The novelty of the light and the color contrast of the brilliant red globe and the white crossing sign makes this warning doubly effective. The sign itself is about nine feet from the ground, while the cross-arms are about eight feet each in length. The bracket hangs about seven feet above the sign, or a total of about sixteen feet from the ground, and extends outward about four feet from the pole. The socket and reflector are tilted toward the pole at an angle of thirty degrees.

An Electric Heating Experiment in Spokane-

MUCH interest is being taken in the experiment in electric heating being carried on under the direction of the Washington Water Power Company in Spokane. A large residence has been fitted out by the company with an electric water heating system. Among the problems that it is proposed to solve is the regulation of the current so that the consumption can be brought down to a competitive basis with fuel. It is admitted that electric current will cost probably twice as much as any other heating medium. As proposed, the electric heating system will run itself, turning on more heat as the temperature drops and shutting off the heat when the opposite limit is reached.

It is recognized that the heaviest heating load will come at the time of the heaviest electric light load and one of the problems to be worked out is the storing of enough reserve heat so that the heating current may be shut off from each house from 5 to 9 p. m. daily. The following description is given of the equipment proposed:

The system is being installed in a 10-room residence in Spokane, a frame building in an exposed location. Being an experiment, it consists of an auxiliary plant directly attached to the present hot water heating system.

The system consists of a 40-kilowatt transformer, installed in a fireproof vault in the basement of the house. This transformer reduces the line voltage, which is 2,300 volts, brought in from the power lines to a low voltage which is then taken to the necessary switches, heaters and controlling apparatus.

The hot water heaters have a capacity of 32 kilowatts and are divided into units of one kilowatt each. The control is automatic by means of thermostatic regulation which consists of two distinct regulating systems. One thermostat is placed in a central point on the main floor, which controls the water supply to the radiators, and the other thermostat is attached to the boiler and controls the temperature of the water in the boiler, in order to store heat when the full heat is not required in the radiators.

Attached to this system, or rather connected to it, is also a clock mechanism, which cuts the electric heaters off the system at the time of station peak load, and also works in conjunction with the thermostat to regulate the temperature within very close limits.

This is probably the most complete electrical installation which has been thus far installed in any private residence. The object of this installation is to ascertain the practicability of heating residences in Spokane at a reasonable cost, as compared to the present coal and wood methods.

Advantages claimed for the new system are automatic operation, no handling of ashes or fuel, uniform heat, no dust or smoke, always ready for use, no labor required for operation, full heat instantly available without waiting for fire to build up, and practically 100 per cent efficiency at all times.

The Electric Dishwasher—A Modern Labor-Saving Device

By GEORGE A. SCHNEIDER*

THE Electrical Way in the home is the way that takes drudgery out of house work and does away with the old-fashioned back-breaking methods. The housewife who uses electricity — that most modern and willing of servants— applies scientific management to her home. She gets a maximum of result with a minimum of effort.

The electric lamp socket affords more than electric light. The same current that brings light into the home can be used to clean it, wash, iron and mend the clothes; prepare the meals and do a hundred-and-one other useful things.

Perhaps the best example of the various domestic labor-saving devices more recently placed upon the market is the electric dishwasher. The advantages of using this machine, as compared with washing dishes by hand, can be summed up in two words—convenience and sanitation.

When washed by hand, each dish, glass and piece of silver must first be scraped and then be individually scrubbed with a soapy dishcloth. The water must be changed one or more times. Each article must next be rinsed in clean hot water. When all of this has been done, the dishcloth must be washed out, the dish towels rinsed and both cloth and towels hung up to dry. Finally the sink and basin must be cleaned. All this takes time and the work is extremely disagreeable and uninteresting — in fact, sheer drudgery. Further, the spread of the germs of typhoid and other infectious diseases has frequently been traced to the unsanitary dish cloth. This "rag" or mop is used to scrub each individual article. In this way the deadly germs are often spread over all the dishes and are served with foods and drink at succeeding meals.

Contrast this method with that of using a modern electric dishwasher. After the dishes are brought from the table, they are scraped in the usual way, and then set into the rack, which is designed to hold the various shapes and sizes. About six or eight quarts of hot water is then turned into the tank and a little soap or soap powder added. The motor is started by simply turning the switch. About a minute is required for washing the dishes, after which the motor is stopped, the drain opened and the wash-water drawn off, carrying the food particles with it. Hot, clean rinse-water is then run in and the dishes rinsed by running the motor for a few seconds. The basket and rack are then removed and the dishes are ready to put away. The hot water remaining, after rinsing the dishes, is sufficient to thoroughly clean the tank and pump. This is done by operating the motor for less than one minute.

The entire operation is exceedingly simple. It appeals highly to the housewife, who washes the dishes herself. It means the elimination of disagreeable work, means more time for reading and social pleasures, and still more; soft, pretty hands. No woman likes to put her hands into hot, greasy, dirty water, as it is not only disagreeable, but chaps, reddens and roughens her hands, detracting from their appearance. This not only wounds her pride but may be painful as well. With the modern dishwasher, the hands do not come in contact with the water at any time.

When it is remembered that three times a day—almost the first work in the morning and the last at night—the disagreeable and tiresome task of dishwashing is repeated, until in one year a total equal to the daylight hours of a summer month, is spent in every home washing dishes—valuable time that could be used to much better advantage by the housewife—it will be apparent that the dishwasher is bound to become a widely used article in the future, and will take its place alongside the other labor-saving devices in the modern home. Considering these facts, it is likely that the architect and his assistants—especially those who specialize in home planning—will soon be called upon to advise his clients on these machines.

The fundamental requirements for a successful machine are: correct distribution of a volume of water under pressure, and means to prevent throwing the food particles once removed back upon the dishes. In an endeavor to meet these requirements two common types have been developed; those employing a paddle principle, and those using a pump.

The paddle machines generally have a round or square tank in the bottom of which is a paddle or propeller operating horizontally upon a vertical shaft which is geared or belted to a motor beneath the machine. The paddle most commonly revolves continuously in one direc-

*Manager, Apparatus Sales Dept., Western Electric Company, San Francisco.

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Architect Henry C. Smith, whose work is Illustrated in this Number
SPECIFIES

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tion, but in some machines it reverses. The dishes are piled in any way into a screened or perforated false bottom just above the water level and paddle. There are generally vertical wire guides to prevent them from falling flat. The glasses, silver and cups are placed on a second rack above. As the paddle revolves the water is surged up through the false bottom on to the dishes above.

The pump type machines differ more widely in their principle of operation, but the following description will give an idea of one method of operation that has proven satisfactory: The dishes are placed in a removable circular shaped wire rack which is set into the tank around the central cylinder and does not move. The intake of the force pump, which is placed below the tank, is about two inches from the central cylinder and at a point where the depth of the water is greatest. Over this intake is placed a fine screen so that food particles once removed cannot return to the dishes. The outlet of the pump is connected directly to the vertical central cylinder, which is perforated with many small holes through which streams of hot water are played horizontally upon the dishes. When the pump is in operation, the water in the tank passes through the screen into the pump, where it is forced up into the cylinder and then out through the holes and over the dishes, whence it returns again to the pump, after first passing through the screen. The water is circulated at a rate of about thirty gallons per minute.

The prices for a domestic machine delivered on the Pacific Coast will vary from about $70 to $120, depending upon the type and size, and also the metal of which the tank is constructed. The machines will require motors ranging in sizes from ⅛ to ¼ horse power.

An article of this kind must of necessity be brief, but it is believed this information will at least give the architect an idea of the progress being made with the dishwasher and its future possibilities.

Electrically Equipped Home

Anoakia, the home of Mrs. Anita M. Baldwin, situated in the foothills fifteen miles east of Los Angeles, has gained renown throughout the West as the ideal home and is said to be the most thoroughly electrically-equipped home in the Southwest. Mrs. Baldwin has paid especial attention to the lighting effects. On the large uncovered veranda of Anoakia about twenty-five single lights of unusual design attract the attention of the visitor. In one of the rooms a particularly striking placement of electric lamps reflects indirect lighting units on the light colored ceiling and displays many rare and valuable paintings to the greatest advantage.

Anoakia, which is of Grecian architecture, stands in the center of a fifteen-acre plot under the Sierras, with a mountain growing out of the back yard. Surrounded by a clump of trees on the west side of the house is an open plunge completely furnished with lockers, showers and other conveniences. One of the novel features of this electrified home is the fumeless, odorless kitchenette, where a fully equipped electric range and other appliances help to solve the servant problem.

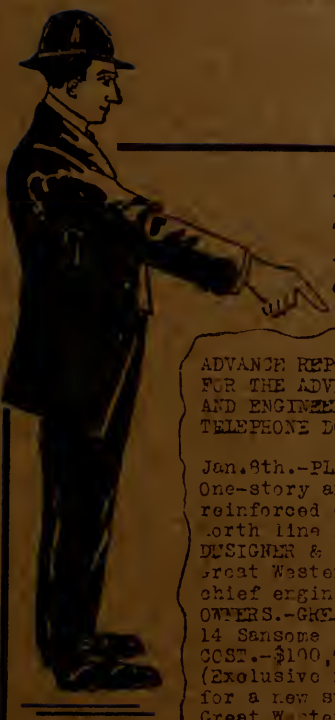
An attractive feature of the house is the electrically equipped laundry, where electric washing machines, irons, driers and other modern apparatus are in constant service. In the basement of the building is located an electrically-driven refrigerating plant of six tons capacity. The machine produces about four hundred pounds of ice each day. Adjoining the plant are the electric vacuum cleaning machines, which extend throughout the house.

Water for drinking purposes is electrically cooled and purified and distributed, while water for the entire establishment is obtained from a well in the remote section of the grounds and piped by means of an electrically-driven pump to a nearby reservoir. In electrifying her home Mrs. Baldwin established a standard of excellence which, it is stated, will test the best ideas of designers and architects.

The Electrification of Everything

In World's Work, for October, appeared an article, "The Electrification of Everything." In introducing his topic, the writer points out steam-generated power—boiler and engine in each industrial plant—is giving way to power from electrical-generating central stations, which supply current for many power users.

"Take the map of the United States and see how the network of great distribution systems is already growing over it. In the South, five states—North Carolina, South Carolina, Georgia, Alabama and Tennessee—have a thick overgrowth of high-power transmission-lines, the cables of eight systems with physical interconnection, so that energy from a score of hydro-electric plants, helped out by some steam-turbine stations, flows through the combined system to the section that needs the energy most. The Southern Power Company, with 1,300 miles of transmission-lines, is already furnishing the drive for 150 cotton-mills. At the western end of this southern interconnected zone two new developments now approaching completion will soon be joined, it is said, and then the copper of a great arterial system will be continuous from the Atlantic to the Mississippi."



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Jan.8th.-PLANS BEING PREPARED.-
One-story and basement steel frame and reinforced concrete distributing station, North line Bush Street, west of Grant ave. S.F.
DESIGNER & ENGINEER.-ENGINEERING DEPARTMENT, Great Western Power Company, (Mr. Ham, chief engineer.)
OWNERS.-GREAT WESTERN POWER COMPANY, 14 Sansome Street, San Francisco.
COST.-$100,000.
(Exclusive report) Plans are being prepared for a new sub-station to take care of the Great Western Power Company's down-town service. Building will be 68-9x137-6, and will have steel frame with reinforced concrete curtain walls and roof. Co[illegible]

[illegible] ADVANCE BUILDING REPORT [illegible]

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Bells and Annunciators

By V. A. KUEHN*

IN specifying and installing the wiring in buildings, that portion intended for electric bells, annunciators and other signal devices has received but scant attention, and yet there is not an item connected with the mechanical or electrical equipment of a building that gives as much trouble. There are wiring contractors who will not take bell or annunciator work unless it is a part of a general wiring contract, because of the amount of trouble which the average installation gives. Bells, batteries and annunciators are just as reliable as are devices for lighting and power, but the trouble has been due to the method of installation rather than to any defects in the apparatus. There is a cheap line of bells and annunciators that will give trouble on any installation, but, as a general rule the fault lies in the installation.

Let us take for example a typical specification for bells, which reads as follows:

> Install a system of bells and push buttons, buttons to be located (here the locations of the buttons are given) to operate bells located (locations of bells are given), all to operate to satisfaction of architect.

The make, size, quality or type of bells and push buttons is not given, the kind of wire or how it shall be installed is not mentioned, and nothing is said about batteries. Sometimes a bell transformer is specified which may or may not work because the lighting current is direct or the bell installation is too large for the transformer or the wire runs are too long and the sizes too small.

Lighting and power wiring is subject to the rules of the Fire Underwriters and is inspected by the City Inspector, but there are no rules or inspection on signal wires or equipment, and, if the installation is satisfactory to the architect, it usually means that it will operate in a more or less satisfactory manner until the last payment is made. After that the owner or tenant pays high maintenance bills and cusses the man that invented such junk. For instance, take an installation made in a downtown store of one of the large coast cities. There are seven bells, one on each floor, operated from one push button at the front door. This installation was run in the standard way, and, although there were eighteen large Samson batteries on the line, the bells did not work satisfactorily and the cost of battery renewal and maintenance for one year was quite a large item. After several years of poor service, the installation was overhauled, the old wiring taken out and other wire was properly installed. Since then, a period of three years, three Samson batteries have operated the system in a very satisfactory manner.

Until recently, all bell and other signal wires were of the type known as annunciator wire. This wire was No. 18 B. & S. gauge insulated with two wrapped layers of cotton thread impregnated with paraffine. (Now we occasionally find a weather-proof wire specified or installed.) No matter of what nature the installation was, the annunciator wire was used and was forever after a constant source of trouble. Two wires under one double-pointed tack was a common cause of short-circuit. Another cause was the damage to the insulation and the wire by rats or mice.

It can be said, without fear of contradiction, that if a bell, annunciator or

*Superintendent of Electrical Construction Department of Gas and Electric Appliance Company, San Francisco.

Prometheus, the Food and Plate Warmer Electric, of course

"Resource" — How convenient at the moment of delay to be able to conserve those qualities of the meal or luncheon which make for their success. Recourse to the Prometheus Food and Plate Warmer has helped many a hostess maintain her poise and good nature when belated guests "keep things waiting" or unlooked-for-friends drop in. It's a necessary "part of the house." Let us tell you why.

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217 Humboldt Bank Building, San Francisco.

The Prometheus Electric Company

other signal system is carefully installed and a good type of apparatus is specified, the cost of installation will not be any greater than a cheap and poorly installed system and the ultimate maintenance will consist only of renewing the batteries at long intervals.

Changes in the Staff of the Society for Electrical Development

A number of changes have been made in the staff of the Society for Electrical Development.

Mr. George B. Muldaur, who had charge of the field co-operative work, severed his connection with the society December 15th. Mr. H. W. Alexander, who is in charge of the editorial and advertising departments, will undertake part of the work formerly done by Mr. Muldaur, assisted by Mr. G. W. Hill.

The publicity work of the society has been handled by Mr. J. T. Kelly, who will remain with the society, and will, in addition to his former duties, undertake some of the work formerly handled by Mr. Alexander.

Messrs. W. W. Ayres and J. J. Reardon, who joined the staff for the Electrical Prosperity Week campaign, have left the society, as has also Mr. C. Ridderhof, whose work consisted of the preparation of advertising copy, booklets, etc., and whose successor is Mr. C. H. Griffith, formerly with the McJunkin advertising agency in Chicago. Mr. Griffith has been preparing their electrical advertising service for the past three years and is equipped by this experience to render the service undertaken by this society.

In this connection, the society points out the fact that they are constantly preparing copy for use in newspaper advertising, booklets, solicitation letters, follow-up letters, mailing cards, etc., for such members as request this special service.

The Society for Electrical Development is continuing its regular work and has under consideration special plans for 1916.

Tower Is Wrecked

San Jose's 207-foot steel electric tower, at the intersection of Santa Clara and Market streets, collapsed during one of the recent heavy gales and blocked the streets with tangled iron and electric cables that emitted long electric sparks from many short circuits. The heavy rain had cleared the streets of people so that no one was injured.

The tower was built in 1883 and its lights were visible for many miles around.

New Chapter Members

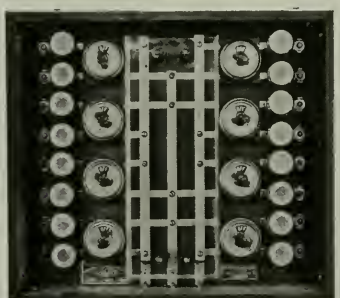
Messrs. W. J. Dodd and S. O. Clements have been elected to membership in Southern California chapter, A. I. A.

Electrical Control in the Armijo High School

THE switchboards in the Armijo High School represent the latest development in electric control for school buildings and offer certain distinctive features which will unquestionably establish a new standard for this class of work.

The modern school building of today, especially so in the smaller cities, is generally equipped with an auditorium, which not only takes care of the requirements of the school itself, but oftentimes serves as a civic gathering place or assumes the role of a theater. Bearing these requirements in mind, it therefore becomes necessary to take into consideration the various combinations of lighting effects required to produce, as rapidly as possible, the desired results for each case and to have a flexible switchboard control at the command of the operator.

The application of the "Demco" distributing system has been adopted, permitting the separate metering of the various sections of the building, thus apportioning the current consumption as a fixed charge to each department. This is accomplished on the main switchboard in the basement, from which all the electric feeders emanate. A separate meter is provided for power, general school lighting, auditorium lights, library and electric cooking service. The system employed is 220 volt, three phase, for power service, and 110-220 volt, three -wire single phase, for lighting.



"Demco" Safety First Panel Board

The panel boards have been located so as to afford the greatest possible convenience in the handling of the illumination, the panel for the first floor being located in the principal's office and those of the upper floors being mounted in the corridors midway between the stairways.

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of a theatrical performance and the control of the moving picture circuit may be manipulated from either this panel or the one in the operator's booth in the balcony.

The engineering department of the Drendell Electrical and Manufacturing Co. of San Francisco co-operated with the architect in designing the general control of illumination for this building.

Electricity for Steam Railroads

It is estimated that if everything in Illinois requiring the application of mechanical energy were run electrically, about 1,350,000 kilowatts would be needed. * * * The total estimated requirement for steam railroads is almost as much as the total requirements for all other purposes. According to the reports of the State Railway and Warehouse Commission, the coal consumption at the present time by steam railroads in the State of Illinois is 11,600,000 tons. If the transportation business were operated electrically, assuming the coal consumption to be three pounds per kilowatt hour, there would be a saving of 7,500,000 tons of coal. Mr. Insull, a noted writer, says: "I do not know of any greater example of conservation of the resources of this great state than the gradual electrification of its steam railroads."

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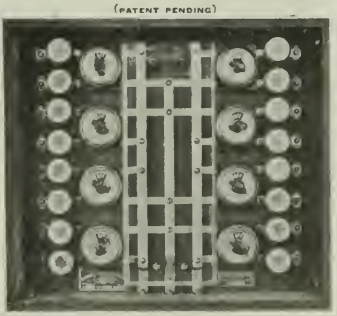

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Read what Henry C. Smith says about the Hoosier Cabinet

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Attention Mr. O. K. Brown

San Francisco, December 23, 1915

Gentlemen: — In reply to your favor of the 22nd instant, I would say that I have used the Hoosier Cabinet for installation in Apartment House Kitchens, and they have proven most satisfactory. Their scientific arrangement and attractive appearance cause them to be not only useful adjuncts, but also add to rental value of such apartments. I shall certainly feel inclined to specify them in the future.

Very truly,
(Signed) HENRY C. SMITH.

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Industrial and Trade Notes

Many Like the "Boudoir" Bath

Some exceptionally fine letters of approval have been received by the Improved Sanitary Fixture Company, Metropolitan building, Los Angeles, of the "Boudoir" bath, a fixture that commends itself to the modern bathroom in that it is sanitary, convenient, a space saver, economical to operate and an ornament to the home.

Here are a couple of recent testimonials which need no further comment:

As to the "Boudoir" bath fixtures, furnished for our new building, Hotel Mercer, No. 1437 South Hill street, will say frankly that there was such a substantial saving of both room and piping, we found great advantage in using this combination fixture.

By substituting "The Boudoir" for the old-style fixtures, we were able to add two rooms on each floor, six rooms in all, to the building.

This arrangement shows that small bathrooms which are so generally used in hotels and apartments, may be made quite ample in appearance, and contain handsome tubs and lavatories of generous size, while under the old way very small tubs and lavatories are used and the bathrooms appear cramped and inconvenient.

We feel these fixtures are a valuable addition to our property. Their operation is exceptionally clean and sanitary, and our guests like them better than the separated fixtures.

LOHMAN BROS., Plumbers.
105 E. Second street, Los Angeles, Cal.

In the Fremont apartments at Santa Monica I used the "Boudoir" bath fixtures exclusively. I am greatly pleased with them. All the apartments were rented as soon as completed and every tenant seems delighted with these fixtures and prefers them to the ordinary bath tubs.

The saving in installation cost was an important sum in addition to the saving of space and building cost.

The entire cost of running hot and cold water pipes and waste pipes and vent for a separate lavatory is saved, and plumbers who do not make allowance for this saving are not giving the builder a square deal.

JAMES H. COMEFORD.
Santa Monica, Cal.

Massachusetts Newspaper Believes in Brick

Discussing the advantages of brick as a building material and its growing use, the Springfield (Mass.) Morning Union in a recent edition said:

"Economy, durability and beauty are three of the recognized tests for any building material. Brick is being crowned with all three. Stucco is being crowned with beauty and economy, but durability is being withheld for a time. Concrete is granted durability without argument, its economy is a matter of debate, and its beauty is dependent upon a thinly classed taste. Wood has been bestowed with all of the terms with a time limit clause in durability, and with wood adherents pleading that their material lasts the lifetime of one generation.

"Therefore, the contest appears to narrow down to brick against wood on the larger scale. There is no question about which is the more durable. It can be said that the evolution of brick and the evolution of the building material problem will receive vast advancement when the public is convinced that brick is as economical as wood."

S. P. Office Building?

According to the San Francisco daily papers, the Southern Pacific will erect an office building on Market street, between Steuart and Spear streets, San Francisco, this spring. It will be part of an original scheme for an office building and depot terminal planned some years ago by Messrs. Carrere and Hastings of New York city. Tenants of the property where the building is to stand have been given ninety days to vacate.

$40,000 Residence

Louis C. Mullgardt is preparing plans for a handsome $40,000 residence for the president of Stanford University. It will be built in the Palo Alto foothills.

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Banquet Marks Close of Banner Year for T. P. Jarvis Oil Burner Company

An event looked forward to with pleasant anticipation each year at Christmas time is the little dinner which the T. P. Jarvis Crude Oil Burner Company gives to its employees. Last month, as usual, the Jarvis family (Mrs. Jarvis always speaks of her business associates as the family) gathered around the festive table at the Jarvis residence on Missouri street, San Francisco. The house was tastefully decorated with Christmas greens, holly berries and mistletoe. Mrs. T. P. Jarvis presided at the head of the table and she was graciously assisted by her son, Ellwood H. Jarvis, who is business manager of the T. P. Jarvis company, and by Frank Dexter, its consulting engineer. It was a very informal, homelike affair and the menu consisted of turkey and the usual "fixin's."

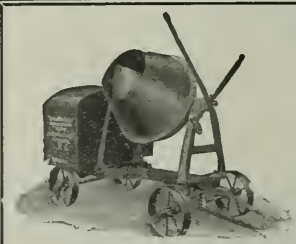
After the dinner Mrs. Jarvis expressed her appreciation of the loyalty of the force and thanked each one for his part in contributing to one of the most successful years in the history of the company. Many of these employees, she said, had been with the Jarvis company for from five to ten years. Short toasts were given by different ones and remarks were also made by the two representatives of the press who were there as special guests—Mr. Larsen, of the Pacific Builder, and Mr. King, of The Architect and Engineer. Before the party dispersed a silent toast was drunk to the memory of Mr. T. P. Jarvis, whose death occurred in the early part of last year.

Among those present were the following:

Mrs. T. P. Jarvis, Mr. and Mrs. Ellwood H. Jarvis and daughters, Miss Annie F. Reardon, Mr. and Mrs. L. Gore, Frank Dexter, Mr. and Mrs. Carroll W. Sawyer, Frank Childs, Arthur Hanson, Dave Henderson, Mr. Gamble, William Johnson, Selby Chavarria, William Mudie, William Johnston, J. W. Dexter, T. Stringer, Ed Hacker, William D. Karr, Harry Hamilton.

A Hand Book of Burned Clay

While purporting to be a price-list, Gladding, McBean & Company's new booklet is, in reality, a very complete hand-book of burned clay products, covering, as it does, and illustrating, sewer-pipe, drain-tile, laundry trays and sinks, thimbles, starting plates and bonnet tops, flue linings, conduit pipes, chimney pipes and caps, mantel tile, promenade tile, fire tile, fire-brick, face-brick, hollow-tile fireproofing, hollow-tile building blocks, flower-pots, palm pots, garden pottery, architectural terra-cotta and roofing-tile. A great deal of very instructive reading matter accompanies the illustrations, relating to the proper use of the products shown. This has to do with laying sewer-pipe and drain-tile, calculating fire-brick, the various bonds of face-brick, brick and tile mantels, and hollow-tile arches. It is a splendid ex-



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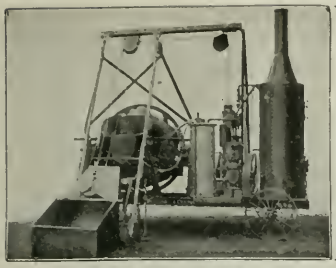

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ample of good printing, and shows that Gladding, McBean & Company, of San Francisco, Oakland and Lincoln, Cal., manufacture an extensive and varied line of burned clay products.

A number of full-page photographic plates of beautiful San Francisco homes are shown, Gladding, McBean clay tile being used for roofing all of these houses.

Big Concrete Factory

The Clinton Construction Company, owners and contractors of the new building for the M. J. Brandenstein Company on Third street, near Townsend, San Francisco, began construction the latter part of December. The structure will occupy a ground area 150x160 feet, being the site of the old California Wine Association's warehouse. The building will be five stories high and built of reinforced concrete, including walls, floors and roof. There will be four elevators and metal trim throughout. The estimated cost is $200,000. The plans were made by George Wagner, formerly with Bakewell & Brown.

The same firm has been awarded the contract to build a reinforced concrete warehouse at Crockett for the California-Hawaiian Sugar Company. The structure will rest on pile foundations. The cost will be in the neighborhood of $200,000.

Banquet of Successful Coast Industry

On Thursday evening, December 30, 1915, the first "get together" banquet of the heads of departments of the Pacific Sanitary Manufacturing Co. and the Pacific Porcelain Ware Co. was held at the St. Germain restaurant in San Francisco.

Mr. N. W. Stern, the general manager of the two companies, presided and in a short speech expressed his appreciation of the remarkable improvement in the quality of "Pacific" ware made during the year. "Quality," he said, "has again proven that it forces recognition and our ware at the present time is equalled by none. It has made a place for itself on the shelves of the jobbers and the plumbers, and has won the commendation of those of the architects who have tried it. Those who have had foresight enough to realize that the future growth of the Pacific Coast depends upon the advancement of its industries and who have been progressive enough to step aside from stereotyped specifications in order to specify "Pacific" have been rewarded by seeing fixtures of which they may be proud in the homes and buildings of their clients. We have won the respect of the plumbers through the absolute fairness with which all of their complaints have been treated, and we have shown that our guarantee is not merely a paper guarantee, but that if a fixture is not absolutely right we will make it

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MARSHALL & STEARNS CO.

WALL BEDS

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right. The men who have made 'Pacific' ware have, indeed, made something of which they may well be proud, and I wish to express the appreciation of the officers of the companies for their work."

Mr. C. V. Cameron, superintendent of the Pacific Sanitary Manufacturing Co. factory, and Mr. S. P. Deasey, who occupies the same relative position with the Pacific Porcelain Ware Co., both made short speeches, thanking Mr. Stern for his appreciation of the efforts of the men, and promising even better ware during the next year.

Mr. Brown, office manager of the two concerns, spoke as follows:

The remarks that I will make to you
Will be very brief and very few.
When I was told that each one present
Was to give a talk on something pleasant,
I searched around and tried to find
Some real nice words of the "rousing" kind,
That would bring each listener to his feet;
But with success I didn't meet.
And then I thought it would be fine
If I could talk in a kind of rhyme.
So if you'll bear with me awhile,
I'll talk to you in this same style.

We are gathered around this board tonight
To talk somewhat of this past year's fight
For better goods and increased sales;
And we're real glad that good-will prevails
Between Factory Men who make our ware
And our salesmen who sell it for profit fair;
And we appreciate the splendid thought
For which this meeting here was brought.

As I belong this side the bay,
Punching typewriter keys as best I may,
I will try to tell you how hard we pull
To keep our factories running full.

The "City Office," to use the term,
Receives the orders from each firm,
And it in turn transmits to you
Instructions as to what to do.
It is here, also, we keep the books,
And can always tell just from their looks,
From month to month and from day to day,
If our factories are making their efforts pay.
We make out the pay checks, and other checks, too,

At the "bottom" of

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It's a paradox that Reliance Ball Bearing Door Hangers are at the "bottom" of good service because they provide "top-notch" efficiency as related to economical building management.

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And pay all the bills when they become due;
We keep all the records and do all the filing.
Keep tab on the sales book, and all such compiling,
Receive all the letters from the wholesale trade,
And keep after them until our sale is made;
We call upon the architects, on the plumbers, too;
In fact, there isn't anything that we don't do
To further the sale of "Pacific" ware,
Sold under the trademark of the Bear.

We have an advertising man,
Who grabs up all the space he can
To tell the public our fixtures to buy,
And that at others they should shy:
"Made in California, sold through wholesale trade,
Guaranteed for life, never be afraid;
For where Quality and Design you find,
The emblem of the Bear is behind."

We write hundreds of letters all over the Coast,
Telling of our plumbing ware, of which we're glad to boast;
Telling of our factories, how our goods are made,
And soliciting a goodly share of the valued trade,
To Hawaii, the Philippines, China and Japan,
Mexico, South America, wherever we can
Secure information that people wish to buy
The best plumbing products under the sky.

We are also glad to tell
Of our two branches doing well,
Los Angeles and Portland both secure their share,
Jobbing friends entrusting many carloads to their care.
And in every district where we gain a firm stand,
Our competitors give us our share of the land;
And the realization of superior worth,
Causes them ofttimes to give us a very wide berth.

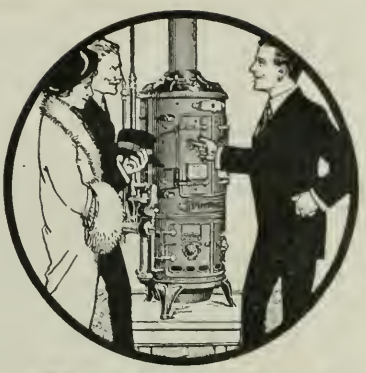
We have a display room open to all,
Where each day a great many pay us a call,
And who promise us faithfully they surely shall
Use goods manufactured in Richmond, Cal.

From these remarks you must have learned
That no stone is being left unturned,
And we who gather here tonight
Have but one desire before our sight—
To put our shoulders to the wheel,
To keep it turning, and to feel
That we will surely win our fight
If we but try with all our might;
For against all of us working together as one
There is no competitor under the sun
Who can take away "Pacific" fame
And substitute his own trade name.

And now my talk will end right here,
And I sincerely hope that at this time next year
We will all be here, and we'll all be glad
To learn of the best year our firms ever had.
Eight hundred thousand dollars, the total of the sales,
Larger factories, increased output, ware that *never* fails,
And let this not be an idle dream,
But our high aim for "Nineteen Sixteen."

Those at the banquet were assured of the full support of the entire four hundred men employed by the companies during the coming year by the various foremen.

Those present were Mr. N. W. Stern, Mr. C. V. Cameron, Mr. S. P. Deasey, Mr. M. E. Wangenheim, Mr. H. M. Friesleben, L. R. Brown, C. B. Noyes, C. H. Bredhoff, J. E. Deasey, L. F. Wolff, J. Grosvenor, S. Ramsey, F. Laiben, A. Wagle, M. Heise, L. J. Waldear and W. Tenney.



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An Attractive Brochure.

By courtesy of the author, Mr. Jack Lawson, paint specialist for the Jones-Duncan Paint Co., we are in receipt of a most attractive brochure entitled "Permanency in Interior Wall Coatings." This booklet will be mailed free to any architect or contractor and will be found invaluable as a guide to and illustration of paint possibilities.

The Jones-Duncan Paint Co. has inaugurated under Mr. Lawson's direction a unique method of co-operating with the architect and painter, which it terms the Alvaline Service, and this beautifully printed book describes how, by working together, very satisfactory results may be obtained. The volume is profusely illustrated and contains views of many large buildings in which color schemes for interior walls have been worked out successfully and permanent results obtained. Among the architects whose works are shown in this monograph may be mentioned W. H. Weeks, Edward Young, Clarence Ward, Oscar Haupt, William Lenzen, C. Gottschalk, M. Mattanovich, McDougall Bros., Geo. H. Howard, San Francisco; William Binder, Frank Wolf, J. M. Zollars, San Jose; W. Marbury Somervell, William P. White, Rebb & Mendell, Herbert B. Pearce, Seattle, and Heath & Grove, Tacoma.

Los Angeles Architects Meet

The regular monthly meeting of the Southern California Chapter of the American Institute of Architects was held Tuesday evening, January 11, in the banquet room at the Bristol Cafe. An address on the "History and Development of Vacuum Cleaning," illustrated with stereopticon views, was delivered by Mr. George C. Collins of the Spencer Turbine Vacuum Cleaning Company. This address was to have been given at the last meeting, but was postponed on account of the failure to receive the lantern slides. A Dutch lunch and smoker was provided. The February meeting will be devoted to new business and general discussions.

Establishes New Connections

Mr. Joseph Janett, sales manager for the Brininstool Co., recently returned from a trip of several weeks up the coast, during which time he established many new connections for his firm and opened up several promising fields where Brininstool's paints and allied lines had not heretofore been actively offered these markets. Mr. Janett brought back a good volume of business, with indications of an increasing consumption of his firm's Los Angeles-made paints and finishes in the future.

New Contracting Concern

A. and F. Wegner, father and son, have formed a partnership and will carry on a general contracting business in San Francisco and the Bay territory. They have offices in the Balboa building, San Francisco, and 1802 Channing Way, Berkeley. Mr. A. Wegner is well known on account of his association for a number of years with Architects Bliss and Faville. He was superintendent in charge of construction of the Balboa building, the Children's hospital and the Eastman Kodak building. Mr. Wegner also had charge of the construction of Major Tilden's building and the garage at Geary street and Van Ness avenue, designed by C. A. Meussdorffer. The Gottschalk department store in Fresno was built under Mr. Wegner's supervision. Mr. Wegner came to San Francisco when construction was started on the Fairmont hotel. He was in charge of this work. The many friends of Mr. Wegner and his son wish them success in their new venture.

Sand and Gravel Plant Doubles Capacity

The California Building Materials Company, which recently moved into spacious new quarters in the Call building, will double the capacity of its Niles plant, spending something like $60,000 for new buildings and equipment. The company owns more than 100 acres at Niles and it is planned to extend the present plant further east, installing new machinery for excavating, screening, washing and crushing that will provide a daily output of 1,200 tons or practically double the present capacity. Most of the machinery is being built in the East and it will be of the most improved type. Electric power will be used. The new plant will be operated the year round. While construction work is in progress the old plant will remain idle, but this will not interfere with deliveries, as the company has in storage more than 1,200 carloads of finished material ready for immediate delivery. It is hoped to have the enlarged plant in operation April 1.

Moving a House by Trestle

A newspaper dispatch from Hillsborough, the exclusive San Mateo county municipality, says:

Suspended fifty feet over the canyon of the San Mateo creek on trestlework 300 feet long, the old Charles Frederick Crocker home, said to be one of the costliest mansions in the State, presents an odd picture to passers by.

The building has been sold to C. J. Lindgren, of Burlingame, and is on its way to a site near the San Mateo Polo Club house. In order to get the building off the grounds of the Upland estate of Charles Templeton Crocker without damaging the trees, $12,000 was spent in building a high trestle for the house to travel on.

The house is four stories high, containing fifty rooms and weighing 700 tons.

Service to the Architect

(Brick and Clay Record.)

The architect, whose good will and co-operation are so necessary in carrying on a campaign for the sale of facebrick, is not an easy subject to generalize about, for the reason that there are architects and architects. Some of them insist on their professional codes being strictly observed, and refuse to allow the client to be solicited by the brick man. Others have no objection to this, provided their consent is gained in advance. Other architects are at the same time builders and contractors, and are frankly business men who can be handled without gloves on ordinary business lines.

Obviously the modus operandi with reference to all of these different types must be varied to suit individual conditions. But it may be safely said that the underlying idea in every instance should be not so much the desire of the brick man to sell something, as his willingness to render service.

Of course, his own self-interest is necessarily present, and that is understood; but the basis on which he should approach the architect is that he is in a position to render valuable service to the latter, by means of showing him the latest and best products of the manufacturers, and keeping him posted regarding developments in the field of brickmaking.

The majority of live architects are willing to concede the ability of the dealer to give them information of importance, and to come regularly, and as a matter of course to his offices, often bringing their clients with them, to see what is to be seen in the way of brick displays, and suggestions on mortar, joints and bonding.

There are others who refuse to deal with the brick man in any way, and whose ideas regarding the character of the material to be used are not known until the specifications are ready for the contractors. Such men, obviously, are hard to deal with, and it is difficult to get on the inside or treat with them regarding any jobs which they may have in process.

But very frequently an architect displays his ignorance of brick conditions, and makes a brick job unnecessarily expensive by not taking advantage of the service available from dealers. In one case an architect, acting on his own initiative, dug up a sample of brick which was not made in his section of the country, and specified it for an important public building job. The figures quoted were so high that it was decided to substitute stone.

If this architect had consulted the brick men of his city, and shown them what he wanted in the way of a brick,

DIGNITY and QUIETNESS

WERE THE PRIME CONSIDERATIONS WHEN THE ARCHITECTS, MESSRS. BAKEWELL & BROWN, ADOPTED

NONPAREIL CORK TILING

for the floor of the COUNCIL CHAMBER
of the SAN FRANCISCO CITY HALL
to be furnished and installed by

DAVID E. KENNEDY INC.

HOLBROOK BUILDING SAN FRANCISCO

one could have been supplied at a figure which would have held the bids within reasonable limits. Thus the refusal of the designer to co-operate with the brick men, he not only deprived them of an important piece of business, but was prevented from carrying out some otherwise excellent ideas in brick construction.

The Cost of Automobiling

Up to early fall of last year the number of automobiles in the United States had reached 2,000,000. Figuring on an average of four persons to each car, which is a conservative figure, 8,000,000 people in this country are daily enjoying automobile rides. To run 2,000,000 cars for one year requires at the very least 1,000,000,000 gallons of gasoline, worth $130,000,000; 20,000,000 gallons of lubricating oil, worth $8,000,000; 12,000,000 tires, worth not less than $16 apiece, or $192,000,000; accessories and extra comforts, goggles, gloves and caps, $50 per car, or $100,000,000; garage charges on short tours, $100 per car per year, or $100,000,000; making the total running expenses for all cars in use about $730,000,000. If to this is added the value of the 600,000 new cars purchased during the year, at an average of $750, or $450,000,000, the immense total of $1,180,000,000 is reached, expended in a single year on the sport of motoring.

Oakland Apartment House

Architects Richardson & Burrell of Oakland have completed plans for a four-story and basement Class "C" apartment house for the Sommarstrom Investment Company, to be located at Twenty-fourth street and Telegraph avenue, Oakland. The exterior will be of pressed brick, terra cotta and galvanized iron cornice. There will be an automatic elevator, tile walls and floors in bath rooms, patent windows, wall beds and steam heat. The building will contain seven stores and thirty-two three and four room apartments. The estimated cost is $50,000.

Plans for a similar apartment house are now being prepared by the same architects for the Sommarstrom Investment Company, to be located at Telegraph and Haste streets in Berkeley. The building will be four stories and basement and contain six stores and sixty-three apartments. The interior will be finished in hardwood. The estimated cost is $75,000.

Large Cement Order

D. J. Maher, of Portland, representing the Santa Cruz Portland Cement Company, has been awarded a contract to supply 50,000 barrels of cement to the O-W. R. & N. Railway Company, to be used in lining the latter's tunnel between Portland and Vancouver. On this big piece of work, estimated to cost $500,000, the railway company furnishes the material, the construction work having previously been let to A. Guthrie & Company, Portland. This is the largest order for cement placed in the Northwest during the last six months. The competition among the cement companies is said to have been very keen.

Large Sales of National Forest Timber

Bids have been accepted by the Department of Agriculture for two large bodies of National forest timber estimated to contain 188,100,000 board feet. One is in California and the other in Utah. With one exception, these are by far the most important sales made the past year.

The California sale is on the Plumas national forest, in the Sierra mountains. The most valuable timber is sugar pine, for which $3.25 per thousand was bid, with an estimated total of nearly 26,000,000 board feet on the tract. For yellow pine, of which the amount is put at over 37,000,000 feet, $2.60 was bid.

Exposition Architecture in Vogue

Exposition architecture will be worked into the general plan of a reinforced concrete store building for Perkins & Company at 1700 M street, Sacramento. It will cost $14,000. The Exposition feature will consist of four minarets, which will be used as vents, and will be lighted to give a pleasing effect to the structure.

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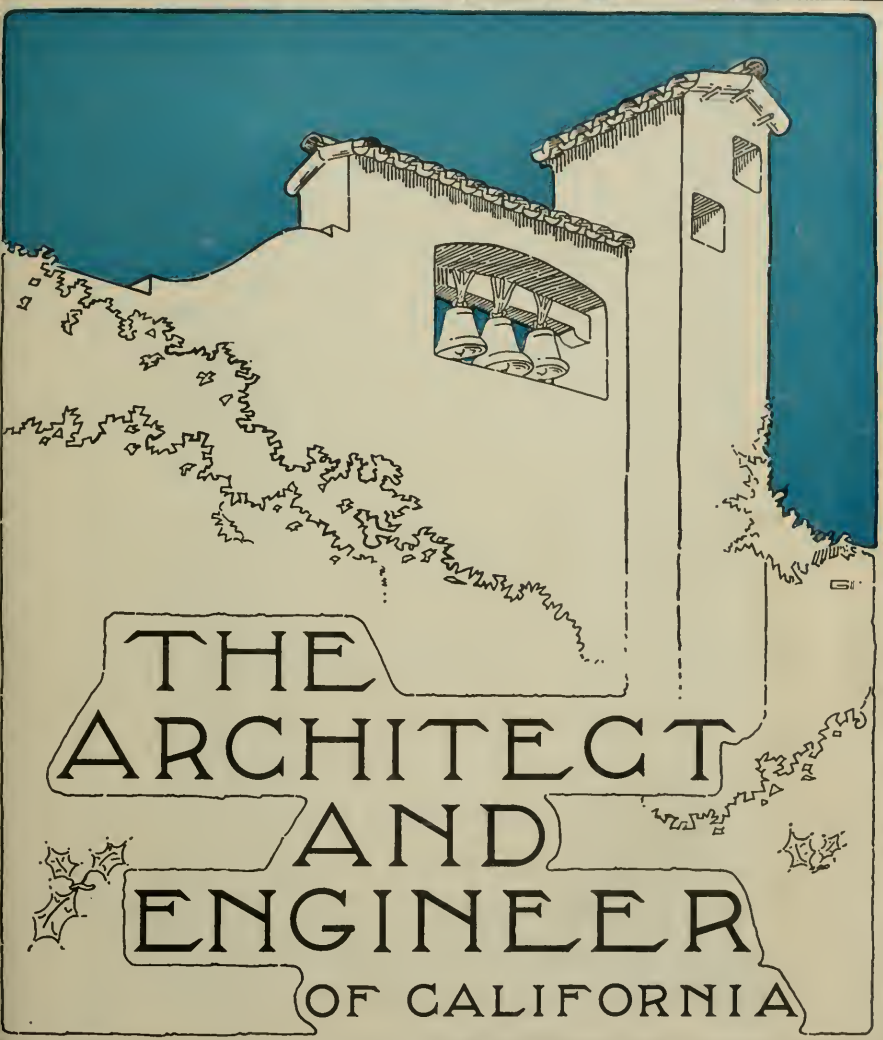

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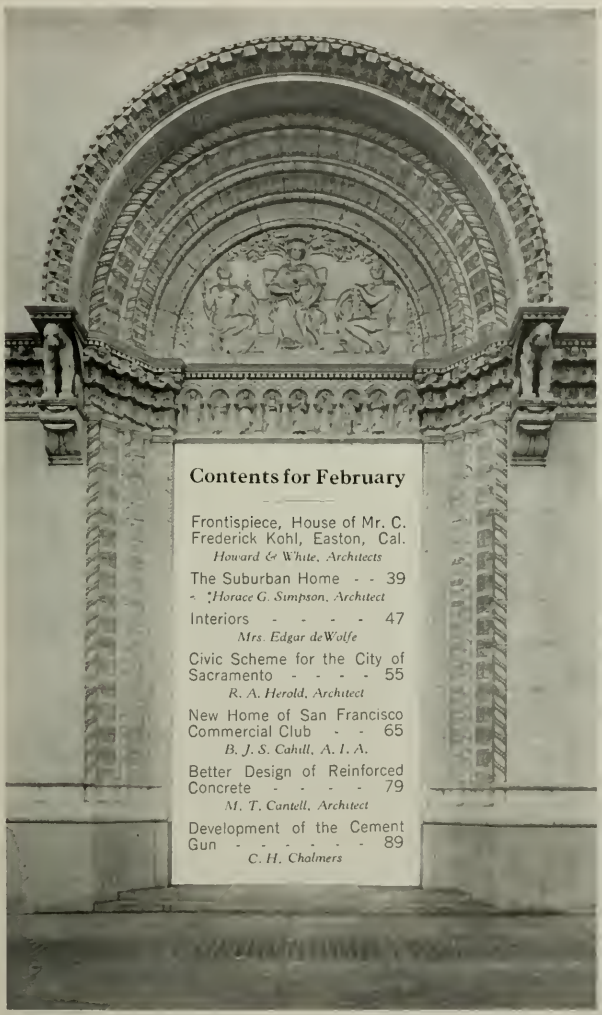

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Frontispiece
The Architect and Engineer
of California
For February, 1916

HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
MESSRS. HOWARD & WHITE *ARCHITECTS*

THE
Architect and Engineer
Of California

VOL. XLIV FEBRUARY, 1916 No. 2

BOXHILL MANOR (ENGLAND)

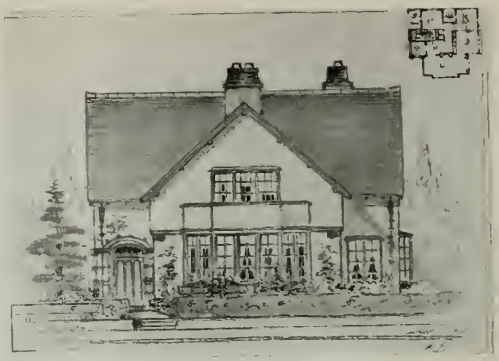
The Suburban Home—Its Design and Setting†

By HORACE G. SIMPSON, Architect*

IN a previous paper attention was directed to the operations of investment companies in developing the suburban districts of our cities, and the writer sought to indicate the public benefit these companies may render when acting under competent professional advice. By comparing the local results with similar work abroad it was seen that the most effective course is to have land development and home building done simultaneously, by the same agency, and under the control of competent specialists.

Unfortunately this method of residence development has not been received by the architectural profession in America with the favor which it deserves. Many architects have failed to distinguish between speculation and investment and have regarded the operations of real estate companies with undisguised suspicion. In this respect they have done injustice to those whose real constructive policy distinguishes them from the broker class and stamps them as useful public servants. It is not claimed that houses built for investment will equal those built for the better informed class of private owners for their own use. But it is claimed that these favored cases are so rare, comparatively, that they effect no visible benefit to the condition of our domestic architecture and in the meanwhile the crimes of the carpenters and jerry-builders arise with such amazing and infernal rapidity that they crowd the better class of work

*Of Wood & Simpson, Architects.
†Continuation of a paper in the December Number.



SKETCH FOR RESIDENCE
Wood & Simpson, Architects

quite out of the picture. Also it should be borne in mind that there are many homeseekers lacking the culture, imagination and good taste necessary to intelligently order the building of a home, for whom a better result is obtained by a properly designed, ready-built house. These considerations lead to the belief that a proper and sympathetic co-operation between competent architects and well-advised and progressive realty operators would produce a more immediate and more general betterment of domestic architecture than is likely otherwise to be effected.

It should be noted that this co-operative and, if you like, wholesale method of building has certain advantages which are sometimes lost sight of. By giving the architect the building of several adjacent houses he is furnished an opportunity for grouping which will rarely occur in his practise for individuals. He also is relieved from the frequent idiosyncrasies of the individual client, and may design in a more general fashion and give expression to his thought of what a home should be. The fact that a group is built for investment or for sale does not of itself confer the qualities of stupidity, monotony and bad taste which, unfortunately, often obtain.

Let us now pass from these general considerations to the discussion of the individual house. Although many exceptions exist, a general survey gives the impression that the small suburban place is not receiving the attention which its importance warrants. It is not being well done. Many reasons may be assigned for this, but the fundamental ones are that architects as a class either fail to comprehend the true nature of the problem, or are unwilling to give it the thought and attention which its solution requires.

This neglect results in designs which are either stupid and com-

SKETCH FOR ONE-STORY COTTAGE
Wood & Simpson, Architects

HOUSE IN GIDEA PARK, ROMFORD, ENG.
H. S. East, Architect

monplace, or frivolous and bizarre, and which have no real bearing on the problems of domestic architecture and of home life.

We have with us also the work of the carpenter-builder class, which is either of the barren shelter or the still more dreadful ornamental gingerbread type. The work of this class is so hideous and of such obvious unfitness and discomfort that one wonders that they are suffered to exist.

If any are inclined to regard the small suburban dwelling as of slight importance, let them consider how intimately and how constantly it affects the lives of the people; let them consider the damage to good temper from inconvenient planning and to good taste from vulgar design and they will see that good houses are something more than a luxury and bad ones a national calamity. The general standard is suffering not from incompetence on the part of the designers but from their attitude in approaching the problem. It is necessary to bear in mind the importance of home-building to the average family; that it is undertaken only once in a generation; and that it typifies their social and esthetic aspiration. These considerations will lead the designer to seek the essentials of convenience, distinction and repose, and questions of style, novelty and ornament become of secondary importance.

COUNTRY HOUSE IN ENGLAND *Leonard Stokes, Architect*
(Successful Treatment on Steep Slope)

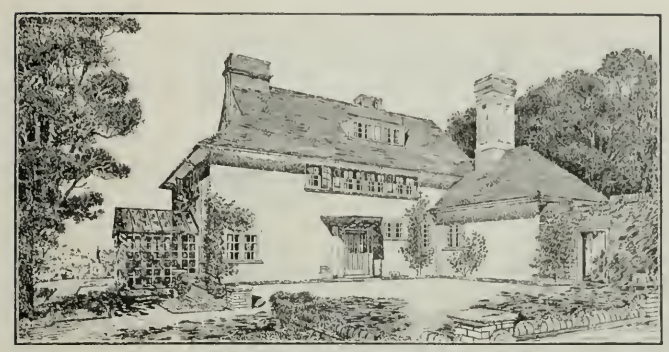
Let us now consider in detail the process of design. Having in mind the proposed cost, the accommodations desired and the social status and habits of the intended occupants, the site is examined. Every characteristic of the lot, its

C. H. B. QUENNEL, ARCHITECT (From Das Moderne Landhaus)
Example of Privacy Secured by Broad Terrace in Front

slope, elevation, trees, surroundings and the direction of the sun and the view should be noted, so that the house may be placed to receive a sunny exposure, good view, and if possible a suitable garden. Special attention should be given to the much-neglected question of privacy in order that the occupants may escape the annoyance of having their rooms or the garden overlooked from the surrounding houses or from the street. Foresight and judgment should also be employed to prevent the obstruction of the view or of the sunlight by subsequent buildings. The usual method of placing the house in the center of the lot is open to objection from all these points and splits the ground into four pieces which are too small to be of use. By placing the house close to the northerly lot line and keeping all the main rooms on the south we get all the available garden area in one place, overlooked by all the best rooms in the house, and these rooms are removed as far as possible from the neighboring houses. Sunshine also is thus permanently insured and the effect of privacy is completed by using long expanses of blank wall upon the northern side of the house.

LYGON ARMS INN, BROADWAY, ENGLAND
Successful Treatment of Large Glass Area

In planning, effort should be made to secure economy, spacious effect, and an abundance of sunshine in all the rooms. It seems in order here to remark the pernicious effect of making the interior arrangement too open. In extreme cases the interior becomes a mere misshapen vacancy with remnants of partitions hanging from the ceiling. This destroys the



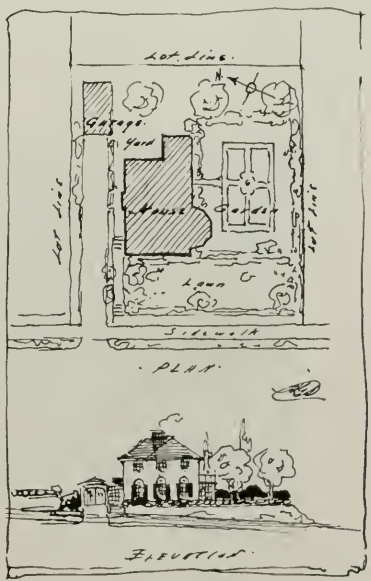
GEOFFRY LUCAS ARCHITECT, LONDON
Distinction Obtained by Large Wall Surfaces on Entrance Side

distinction and decorative effect of the interior and deprives the house of the internal privacy which the occupants' diverse interests require.

Variety in the sizes of rooms is an often neglected element of distinction in planning and leads at once to a corresponding variety in fenestration which adds to the interest of the interior and exterior alike.

The question of windows requires a very special study to fit our peculiar local climate, as we require an abundance of sunlight at certain seasons, while at others the glare from this source is oppressive. This requires a sort of adjustable glass area, best secured by very large windows on the south side of the rooms, with shutters or heavy curtains to temper the light in sultry weather. This large glass area requires skillful treatment in order to obtain good scale and domestic character. It must be suitably divided to harmonize with the other windows of the house, as the large sheets of plate glass, which we often see, remind us of shop windows, and are a certain indication of vulgar taste.

No question in connection with the small house requires more thought or skill than the entrance. To attempt anything formal or grandiose would be ridiculous; and yet one should not burst in too abruptly, nor should the whole interior be exposed to



SKETCH BY AUTHOR SHOWING METHOD OF PLACING AS INDICATED IN TEXT

GLOBE ROOM, REINDEER INN, BANBURY, ENGLAND
Ample Glass Area Without Crossed Light

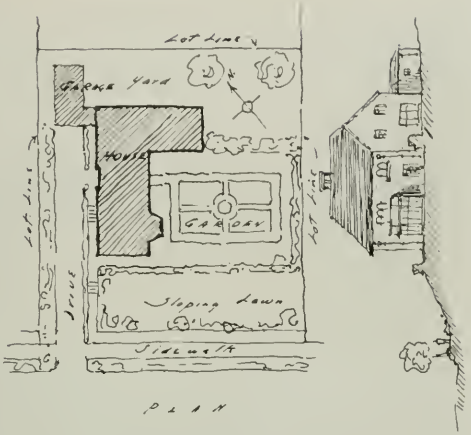
view from the street every time the front door is opened. To manage the entrance into a small place with dignity is an art, and its successful accomplishment is rare.

In the matter of exterior design and expression there is much room for improvement. The cheapness of cement stucco and galvanized iron, and the readiness with which these lend themselves to ornament, have led to a tendency toward over-decoration, and to a neglect of simplicity, proportion and good scale. Heavy, stupid copies of the missions, without the charm of the old work, seem regrettably numerous. Equally unfortunate has been the importation from Europe of certain bizarre and trivial mannerisms which are the offspring and successors of L'Art Nouveau. There also is a sort of style imported from the Middle West and consisting chiefly of plate glass and horizontal lines, which enjoys a wide vogue and a quite inexplicable reputation for originality. Without doubt our domestic architecture is suffering from the taint of egotism in the designers which causes them to express their own peculiarities rather than the uses of the building and the personality of its occupants.

WHISTLER'S HOUSE, CHELSEA, ENGLAND *(From Vogue)*

Another point which should engage our notice is that many houses, by lack of variety and emphasis in the design and arrangement of windows, give undue prominence to the minor rooms and those of occasional use, while the real life of the family appears to be crowded into a small corner of the place. By suit-

ably regarding this point it is possible to attain an effect of spaciousness and distinction even in the smallest place, and if we can contrive the picture to get the enjoyment of living into the foreground and its burden mostly out of sight, we shall attain the quality which the suburban dwelling most needs.



SKETCH BY AUTHOR ILLUSTRATING PROPER PLACING OF GARDEN ON SLOPING SITE

This latter remark applies with equal force to the arrangement of the grounds. These too often are merely a spectacle for the passerby and a source of expense and labor to the owner. Every effort should be made to obtain a garden which is a habitable and accessible part of the place. It is often possible by taking advantage of the slope of the land to obtain a good degree of privacy even on a very small lot, and the garden then becomes a veritable out-of-door extension of the house, which is a source of delight and of repose, and infinitely enriches life.

It is hoped that the foregoing may help to direct increased attention to a branch of architecture which, dealing with the smallest and least expensive units, has collectively such a potent influence on the lives of the people, and upon the aspect of our cities, as to constitute one of the chief factors in civic improvement.

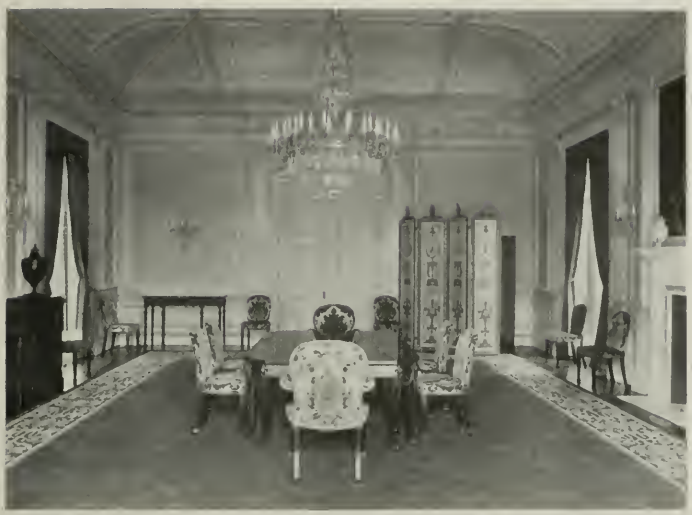
[Editor's Note.—In his next paper Mr. Simpson will contribute a discussion of planting and landscape work as related to the problems of suburban residence.]

* * *

A Marble Building with a Tower

The new office building to be erected at the corner of Madison avenue and Forty-second street, New York, by August Heckscher, will have novel features that make it specially interesting to the public. The architects are Jardine, Hill & Murdock, and they have solved the problem of furnishing permanent light and air for all of the tenants of a skyscraper. The plot of ground to be improved fronts approximately 118.6 feet on Forty-second street by 98.9 on Madison avenue. This is to be covered with a five-story structure. Above this will rise a twenty-story tower (giving twenty-five stories in all) of large area but setting back 23.6 feet from Forty-second street and 20.6 feet from the southerly line on Madison avenue. Thus it will be seen that despite all building operations adjoining, an open space is provided. The architecture will be in the Italian Renaissance style and the first five stories will be of white marble.

THE ADAM DINING ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
MESSRS. HOWARD & WHITE ARCHITECTS



ADAM DINING ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

Interiors

By MRS. EDGAR BEWOLFE, Interior Decorator

IS not the trade title of "decorator" really a misnomer? It is decidedly ambiguous. The pastry cook decorates the top of a wedding cake (commonly considered indigestible) with squirls of sugar nothings, and the gorgeous American salon of the past has been decorated by the average painter with squirls of gold and joyousness. But neither one was of value for food or comfort.

Would not the house artist prefer, on the whole, to be called in homely American parlance a "house furnisher"?—for this sobriquet at least suggests grouping together all material essentials with which to call forth potentialities of a house as a home. Home embodies protection, environment, education, entertainment, order, law, comfort and beauty, and is never a home without some degree of each of these aspects.

It should be the aim and earnest endeavor of the "house furnisher" to provide all these conditions as far as he is permitted. How acceptably this has been accomplished on our western coast will be shown by a series of photographs covering the wide gamut of interior decorating of the large country residence, the large city house, the small city apartment, the large country hotel, and various beautiful rooms of especial individuality.

Interior decorating of the eighteenth century is the best of any period, and this is directly the result of the close co-operation of architect and decorator. The architect provides the shell, hollow or protection from the storm or heat, and through its friendly apertures comes to us the glory of the rising sun, or streams forth the beams of hospitality to "the stranger within our gates." He constructs its avenues for artificial light

ADAM DINING ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

TRELLIS BREAKFAST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
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TRELLIS BREAKFAST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
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MAIN BEDROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
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DRESSING ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

BLACK LACQUER GUEST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

and heat, and apportions the lines of order called rooms. All the exterior, including the landscape gardening, properly belongs to the architect to complete his ensemble. But here his work should reach its border, and the province of the interior artist take shape.

Signs abroad invariably read "Interiors," and this signifies all wall architecture, covering or decoration, as well as furniture. Who would limit the true portrait painter to a prepared canvas with a drab, uninteresting background, and expect him to depict thereon a living figure?

Three modes of procedure are logical: Either the architect should be able to build and furnish a house complete, presenting a unit of design in house, garden and interior; or the architect should be authorized to build only the shell and the decorator given the interior without limitation; or there should be such a close consultation between architect and decorator as to present unison of idea.

* * *

The C. Frederick Kohl house, illustrated in this issue, is an admirable country residence of the early English type, situated on a height in Hillsboro, San Mateo county, California, commanding a magnificent view of the country on one hand, the ocean and San Francisco on the other. The fine architecture (Messrs. Howard & White) in red brick and gray stone, is beautifully environed by the finest old oak trees in this part of the state, and smooth green lawns melting away into the beyond.

With the exception of two rooms, the interior architecture of this house was designed by and executed under the supervision of the decorator, with the result of a truly harmonious ensemble.

Entered immediately from the vestibule, the large English living hall is literally arranged about the hostess to give opportunity for her talents as a notable singer and musician. It contains a magnificent pipe organ as well as all advantages for musical entertaining. The prevailing note of color is Genoese red.

The library on one side, paneled in dark oak, has its entire floor covered with a wonderful old Chinese rug in blue and yellow. The curtains are of royal blue and gold. The furniture is dark oak, and there are also fine specimens of Queen Anne needlework chairs. The room has solidity of color as befits a library, but also light and warmth.

On the opposite side of the hall is a triumph in period architecture—the Adam dining room.

When the writer [Mrs. Edgar de Wolfe] designed the plans for this room, one of the best known English architects said it would be impossible for American workmen to carry out its exquisite details. It is certainly a great satisfaction to our growing American art consciousness to state that the beautiful ornamental plaster ceiling was executed by Hoff & Hoff, of San Francisco; the splendid carving of the panels, doors and architraves, by A. J. Forbes, also of San Francisco; and the perfect toning of the walls in soft green and the ceiling and woodwork in old ivory (looking 150 years old), by J. H. Keefe, of the same city.

The splendid comprehensions of these three artists in carrying out the ideas submitted have combined to make this room a "thing of beauty and a joy forever." The brown English mahogany furniture is covered in rose and green Italian velvet. The mantel is an antique from an old English mansion. The Adam screen and over-mantel are signed pieces. A hand tufted rug in green was made in Scotland.

The trellis room opening from the dining room is entirely original. The walls are in French gray, the trellis in canary yellow. The charming (Grisailles) panels were brought over from Paris. The chandelier is in black

BOUDOIR, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

BOUDOIR, HOUSE OF MR. C. FREDERICK KOHL, EASTON, CALIFORNIA
Messrs. Howard & White, Architects

BLUE AND CREAM GUEST ROOM, HOUSE OF MR. C. FREDERICK KOHL, EASTON

iron with white porcelain flowers. The floor is in black and white marble. The savonnerie rug has a dark gray ground, black border, and flowers in soft shades of yellow and blue. Yellow mohair covers the carved dark gray furniture. Console is in yellow marble. "September sunshine" would best express the mellow warmth of this room.

Views are also given of a suite of bedroom, dressing room and boudoir as especially individual.

Carpeting the entire bedroom floor in putty color gives a one-tone base throughout, leaving no break in opening doorways.

The bedroom is paneled in old ivory with painted over-doors. The draperies and furniture covering are in salmon pink and cream, giving an effect of warmth, dignity and elegance.

The walls of the dressing room are painted panels by old masters in pastel shades. The curtains are woven to order of taffeta in four soft colors blending with the walls. The cream and gold furniture is beautifully carved by American artists.

The piquant background of the boudoir is in green and rose striped damask. This beautiful material was reproduced on an American loom from a small piece discovered in Rome. Some chairs are in green silk mohair, others in rose damask. There is a very beautiful Adam mantel here. The big bay window presents a lovely panorama from this little resting room.

American art in every aspect is claiming its own, and this residence combining its architecture, craftsmanship and color ensembles offers many striking tributes to our ability on this side of the Atlantic to grow up into "old masters" ourselves.

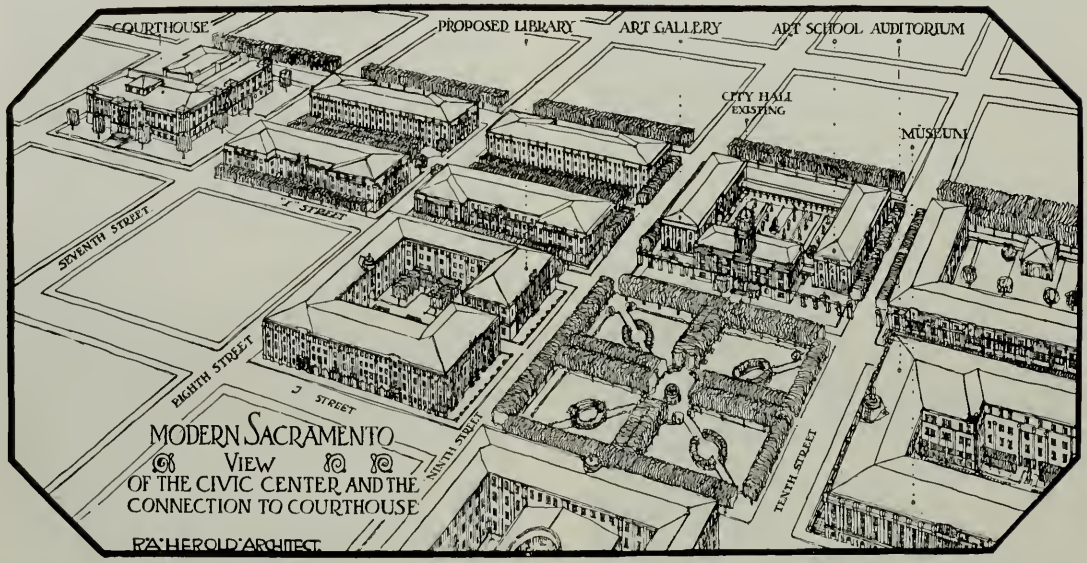

FIG. 1. TREATMENT FOR PROPOSED CIVIC CENTER, SACRAMENTO, CALIFORNIA
R. A. HEROLD ARCHITECT

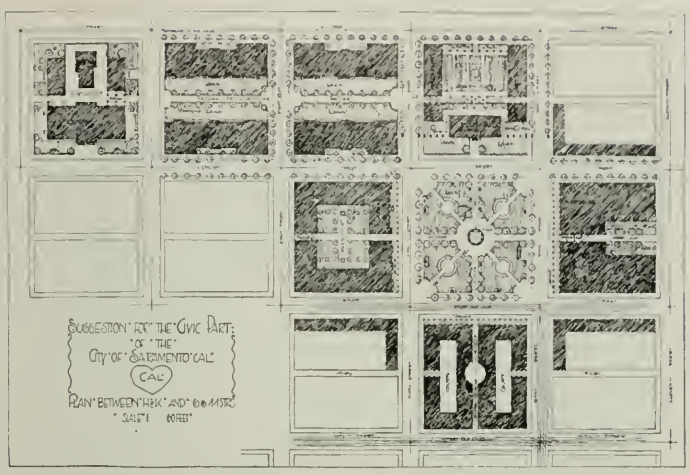

FIG. 2. PLOT PLAN, CIVIC CENTER FOR SACRAMENTO, CALIFORNIA
R. A. Herold, Architect

Civic Scheme for the City of Sacramento

By R. A. HEROLD, Architect

SACRAMENTO, like a great many other American cities, has awakened to the fact that modern civic improvement is essential to the proper development and growth of a community. To this end several noted city planners have lately been called upon to make suggestions and give advice as to the proper solution of the problem. Not long ago a city planning expert was engaged to lay out a park system and prepare a city plan along modern lines.

Recently, the city of Sacramento purchased additional property fronting on the City Plaza, I and J, Ninth and Tenth streets, for the purpose of creating a civic center. During the latter part of 1915 competitive plans were submitted for a hundred thousand dollar Carnegie library, to be located on one of the acquired sites, and contracts were let in January for a new Hall of Justice to cost $200,000 and to be erected on the court house site.

In view of the desire for civic betterment and fearing the possibility that work on the Civic Center would be commenced before a comprehensive plan has been presented or adopted for the design, location and grouping of the buildings, the writer has prepared a number of drawings showing his ideas on the subject.

Wrong city planning is extravagant and wasteful. Right city planning is one of the best investments a city can make.

Fig. 1 illustrates the proposed treatment for the Civic Center portion of the city. A passage has been planned through the center of the block bounded by Ninth and Tenth, J and K, on the main axis of the City Hall. This passage is modeled after those of European cities and will be faced with small retail stores.

The Plaza will be remodeled to give it a more formal appearance so as to harmonize with the architectural treatment of the surrounding build-

FIG. 3. INTERIOR OF PROPOSED PASSAGE, SACRAMENTO CIVIC CENTER
R. A. HEROLD ARCHITECT

ings. Walks will be cut through to give the necessary vistas and promenades. In carrying out the scheme for the City Hall Square it is proposed to use the entire block, the City Hall being the dominant feature. In addition to the City Hall and Art Gallery, an Art School with statuary court and garden is planned.

The site for the Auditorium is on the east side of Tenth street, north of the alley and facing the Plaza. The Library is on the west side of Ninth street, north of the alley facing the Plaza. These buildings should have at least 160 feet frontage. They should have the main facade fronting on the Plaza, and for a proper setting will require the entire front of the half-block.

A parked way is shown connecting the City Hall block with the Court House block. This arrangement will have a tendency to enlarge the scope of the Civic Center and greatly enhance its value.

After the portion of the Civic Center under the control of the city has been carried out the adjoining property will have an increased valuation and the owners will be better inclined to make improvements in keeping with their environments.

Fig. 2 represents the plot plan of the Civic Center scheme. The plot plan is a mechanical drawing worked out to a scale giving the actual dimensions of the site. In a perspective view distances are more or less left to the imagination. The solution of all projects of this character are first worked out in plan and afterwards the design in the elevations and perspective drawings.

One of the main features of the plan shown is the open spaces, viz.: The plaza, open courts and parkway. These spaces are essential for several reasons. The open spaces of a city should provide its ornament. They furnish light, breathing room, circulation, and secure locations for civic structures where they will show to the best advantage and enhance the possibility of artistic values.

When one realizes the amount of space that is given over to small, inadequate light courts and the unsightly back yards of the ordinary city block, there seems to be some reason for advancing new theories in the art of city planning.

The plan of the present city plaza is primitive in the extreme and seems to have been laid out on the go-as-you-please or on the "catch-as-catch-can" plan. It should be the show place of the city and not a lounging spot for men, women and children. Other places more suitable already have been provided for that, and still other sites undoubtedly will be provided.

The plaza should not be a park, but a formal, dignified place, embellished with the art of Nature, sculpture and architecture. Civic art should have here full opportunity, and on great days this should be the center where people should congregate.

Having called attention to the artistic part of the plan, some mention should be made of the utilitarian features. One of the first necessities in connection with this Plaza will be public comfort stations of modern plan and convenience, one for men and one for women.

The Acropolis at Athens, the Forum in Rome, the market places in the mediaeval cities, and more recently the courts of the Panama-Pacific International Exposition, are inspiring examples of what has been done in creating the City Beautiful.

Fig. 3 shows an interior view of the proposed passage through the block J and K, Ninth and Tenth streets, centered on the main axis of the

Plaza and City Hall. A glimpse is had of the Plaza and City Hall in the distance.

Similar structures are to be found in many European cities, prominent among which are those in Milan, Berlin, Vienna, Prague, Paris, Brussels, Madrid, and the largest cities of Australia. The city of Cleveland also enjoys the distinction of possessing one of these features. When the writer was abroad some years ago the one at Milan appealed to him as one of the most spacious and attractive in Europe. The passage connected the Piazza del Duoma and the Piazza Della Scala, and was called the "Galleria Vittorio Emanuele." Its cost was eight million francs. It is 960 feet in length, 48 feet wide and 94 feet high.

The form is that of a Latin cross with an octagon rotunda in the center upon which rests a cupola 180 feet in height. The ceiling and cupola are adorned with beautiful frescoes and the gallery contains handsome shops, statuary, and is brilliantly illuminated at night.

The one recently erected in Berlin is considered one of the most modern in Europe. The cities which are fortunate enough to possess features of this kind consider them a valuable asset.

These passages are planned for the purpose of diverting traffic and providing additional shopping space in the crowded business district of a city. In referring to the plot plan the object of this passage can be readily conceived. The passage has an additional advantage of affording protection to pedestrians from the elements at all times, and it differs from the ordinary street or alley by being able to utilize the space above for building purposes.

These passages are usually promoted by private enterprise and yield a profitable income on the investment. The opportunity seems to be ripe for such an undertaking, and should appeal to prospective investors.

The arcades shown in front of the buildings facing the Plaza and connecting with the passage, are particularly fitted for this locality. A great many of these arcades will be found in the cities of Italy and Spain, which countries are similar in climate to our own. The architecture of the buildings is greatly enhanced by the introduction of arcades, and they supply the needed shade during the heat of the summer.

Fig. 4 shows a design for the new public library such as would be appropriate and harmonize with the Civic Center scheme. It is proposed to locate the building on the west side of Ninth street north of the alley between I and J streets and facing the plaza.

The city recently acquired the lot on the southwest corner of Ninth and J streets, having a frontage of 99 feet on Ninth and 160 feet on I street. It has always been the writer's contention that placing the Library on this lot would be a grievous mistake. In planning the Library for this site it would be necessary to have the entrance and main facade on I street, when in reality it should face the plaza, where it would appear to its best advantage.

The design shows an arcade placed in front of the building which has the double function of providing a covered passage way on the ground floor and an open balcony on the second floor, which can be utilized as an open-air reading room in connection with the library. This feature places the main line of the building back from the lot line and gives a view of the buildings further up the street, which is a very desirable effect.

The City Hall, costing $200,000, in its present environments is an excellent illustration of the way the Library would look under similar conditions. There is no sense or reason in depreciating the effect of a costly

FIG. 4. SUGGESTION FOR PUBLIC LIBRARY, SACRAMENTO CIVIC CENTER
R. A. Herold, Architect

FIG. 5. CITY HALL AND ART GALLERY, SACRAMENTO CIVIC CENTER
R. A. Herold, Architect

public building with unsightly surroundings. One of the difficulties which will be encountered in perfecting a city plan will be in providing sufficient space for building purposes. Strangers visiting our city comment upon the close grouping of buildings on the lots, especially in the residence district.

Since the Library is the first building to be erected as a part of the Civic Center, the utmost care should be exercised in providing a suitable site and selecting a plan which will be in strict accord with the entire scheme.

Fig. 5 shows a portion of the existing City Hall and the proposed Art Gallery. In carrying out this scheme it will be necessary to acquire the north half of the City Hall block, which again may meet with opposition. When one considers the vast amounts of money that have been expended in other cities much larger than ours in procuring sites for public structures and space for civic improvements, this is comparatively a small item.

It has been the universal experience the longer cities delay in purchasing property to meet civic needs the greater will be the expense. Several years ago the writer suggested the idea of securing a Civic Center site in the central portion of the city, on which was to be placed the City Hall, Court House, Auditorium and Library buildings. At that time it was possible to purchase the required property for about $250,000. Today it is worth at least double that amount. If this plan could have been carried out along these lines our public buildings would have been properly grouped and Sacramento could now boast of a modern Civic Center.

When the City Hall was erected it was intended that other existing buildings on the same half of the block would be removed, and it is to be regretted that this has not been accomplished.

In connection with the Art Gallery it is proposed to erect on the remaining portion of the block a combined exhibition and museum building. At the rear of the City Hall and between the two buildings a large court or garden will be placed and enclosed with arcades. Fountain statuary and fragments of architecture will be displayed in this court, giving it an artistic effect.

A fireproof building properly located should house the city's works of art, instead of allowing them to remain in an old building in a much less frequented locality. An Art School in conjunction with the Art Gallery would be a valuable asset, and the adjoining court should be a source of inspiration for the students in their work.

In the Museum and Exhibition building a collection of historical relics can be installed and a valuable educational and industrial exhibit maintained. Most all of the prominent cities of Europe provide space in such buildings for a permanent exhibit of local products and natural resources.

In the picture a number of pylons surmounted by statuary typical of California, are introduced to lend artistic value to the scheme.

Fig. 6 shows the proposed parked way from Seventh to Ninth street, connecting the City Hall group and the Court House group. These two important sections of the city should not be left in their isolated positions, but should have a connecting link other than the ordinary street. If this idea could be realized it would add materially to the development of the Civic Center.

The alley will be turned into a promenade flanked with trees, lawns and flower beds. Owing to the fact that the land required for this purpose is at the rear of the property affected, the cost will be nominal and the increased valuation of the property quite an item to the owners. It

FIG. 6. PROPOSED PARKED WAY, SACRAMENTO CIVIC CENTER
R. A. Herold, Architect

would be an incentive to the property owners in the immediate vicinity to erect fine structures and thus increase their incomes and the beauty of their environs. This would be an ideal location for buildings of a quasi-public nature.

The Court House and County Jail were the only buildings intended for the block on which they now stand, and in the writer's opinion the placing of additional structures on this block is a grievous mistake. The situation of the present buildings in relation to the site and the proposed improvement of same is ideal. Another building on this site would have a tendency to disturb the existing architecture, as well as obscure what is already there. The loss that the community would suffer by such action would more than cover the cost of a site in another and, maybe, more desirable locality.

* * *

The Rebuilding of France

A commission has recently come to the United States from France to consider the means to be taken for the rehabilitation of that country at the conclusion of the war. Maurice Damour of the commission says that the country will need help in the way of building materials. Of course, there is much old brick and stone that can be used again, but the lime and cement for mortar will be lacking. The quarries from which the lime was taken have been ruined and cannot be put into operation again without much new development work. The amount of the building that will be necessary is shown by the fact that the damage in the city of Lille alone is estimated at $300,000,000, and yet Lille did not suffer as greatly as Rheims.

A Word to the Advocates of the Quantity System

THE movement urging the adoption of the Quantity System in the United States was commenced in San Francisco early in 1891. This movement has continued down to the present time. Its object has never been, and is not, to profit financially, but to promote better contracting methods between owner and contractor, solely because they *are* better. Neither the movement (nor its promoter) endorses any firm or individual, as is commonly supposed, or suggested.

Considerable interest has been aroused in the United States as a direct result of these long-continued efforts. Much of an educational value has been accomplished. Those, however, who have the future adoption of the Quantity System really at heart (and not because of the business it may bring them) realize that much more preliminary and gratuitous work must be done before the advantages of the Quantity System can be fully understood and appreciated by contractors and owners.

Unfortunately, however, as is so often the case (when likely-looking prospects appear upon the business horizon), the commercial spirit, the dollar-getting desire which cannot wait, has been aroused, and we already have business enterprises advertising their wares, their material lists, or what not, from a few dollars, up. Then again, during the last year or two there have sprung up, principally in our larger eastern cities, certain self-styled exponents of the Quantity System, some of whom, it is safe to say, have no practical experience of the Quantity System, and herein lies a danger before us.

It therefore behooves the conservative admirers or advocates of the Quantity System to mark time, and not be too ready, at least for the present, to allow the use of their names as advocates of any immature, faulty, and varying methods adopted by any firms, bureaus or individuals who, to get business, are far too ready to make claims for their so-called lists, quantity surveys, unit items, or whatever name the promoters adopt to attract customers. It is sufficient to say that such methods are not those of persons educated in the practical operation of the Quantity System, and which is the only standard method which possesses any advantage over the contracting practices of today. The Quantity "System" is the proper term to use, and it possesses a greater significance than anything else.

* * *

Some parties, attracted, evidently, by the general interest thus aroused by the movement in aid of the Quantity System, and which has been systematically conducted from San Francisco for many years past, are advertising largely that they will supply Bills of Quantities, and guarantee their accuracy (within a certain small margin) by giving a surety company's bond to that effect.

It would seem, however, that the value of any such guarantee must depend largely, if not entirely, upon the precise conditions and terms included in the contract documents, and in the quantities themselves. Mr. G. Alexander Wright, who has had considerable practical experience with the Quantity System, is of the opinion that more care and self-restraint should be exercised by those who, without experience in the workings of the Quantity System, are ready to advance claims and make statements concerning it, in order to secure business, and which may not be so easy to substantiate in case of disputed or short quantities. Extravagant statements will certainly not be of material benefit in the long run, and it is

not easy, much as we would like to do so, to endorse all that is said and written upon this subject. Mr. Wright, however, as is well known, is conservative in his views, and does not, therefore, approve of everything which appears upon this interesting subject, as we may judge from the following communication which has reached us and which, we understand, is being circulated among members of the Institute.

The good work which Mr. Wright is doing so disinterestedly in aid of better contract methods is generally appreciated. His chief care, however, is, that when the Quantity System is once started, that it should be started right; that it be consistent and equitable, with absolute fairness to contractor and owner so clearly manifest that it may be worthy of being called the "American System" to distinguish it from other systems, which have certain features which would be unsuited to American methods. With these objects in view, the following communication has been sent to members of the Institute:

To the Fellows and Members, American Institute of Architects:

Gentlemen: The New York firm who advertises "Quantities" in the Journal of the A. I. A. are soliciting permission from architects to add their names to the said firm's list of advocates of "Quantity Surveying," which when systematized, means the "Quantity *System.*"

A similar request has recently been received by the undersigned. Enquiries concerning the methods and quantities of this firm have also reached me, for the reason it seems, that I am usually considered to be responsible for the Quantity System movement in this country.

In view of the above facts, it seems but natural that members of the profession should expect to hear my views concerning certain advertised claims made by this new development.

Much as it would please me to be able to voluntarily endorse the many claims and statements made by others about the Quantity System, I am unfortunately unable to go so far. The published quantities, a copy of which are before me, are in my opinion open to criticism, from several viewpoints. Here are some, viz.:

First: These Quantities, and improperly so, force the bidder to refer back to the drawings and specifications before he can determine his itemized cost values. All information necessary to determine items of cost and quantity should appear in the Quantities. To give this, is clearly the duty of the Quantity Surveyor. His fee covers this service.

Second: The suggested protection against incorrect Quantities by a Surety Company bond becomes a doubtful issue if the quantities contain covering clauses capable of being so construed in a court of law as to protect the parties who prepared the Quantities, and necessarily their bonding company also. Architects who have had experience following a loss, with the attorneys for a bondsman, will realize what they might expect, when the language of the Quantities makes it obligatory upon a bidder, before bidding, to examine all the drawings and specifications (with a view, of course, to his including every cost in his bid). There is a condition, a loophole here, which should not be.

The very essence of a bill of Quantities is, that it should give the bidders the fullest direct information possible to enable them to intelligently price each unit, and not make "covering" clauses, telling bidders where they can find that information for themselves. This is not Quantity Surveying, nor will it satisfy either architect or owner when they once understand the kind of service they are entitled to receive.

Third: The labor and material "descriptions" in the sample quantities before me, issued by the firm referred to, are in my opinion insufficient to enable an intelligent competitive unit price to be put against most of the items. If bidders who are obliged to use such quantities are to be compelled to examine the whole of the drawings and specifications to ascertain all cost and expense incident to such items (and this is the exact language used in the quantities before me), then the value of such quantities to a bidder is limited, and is but little, if any improvement upon "no quantities at all." Possibly it may not be the intention to bring about this condition, but it is there nevertheless, in my judgment.

Such a document falls very short of the standard used where the Quantity System is in daily operation. I believe our "American" Quantity System, when once properly started, should be at least as good as any other, and as much better as is possible.

There is no criticism to offer to the methods employed by parties who simply take off quantities to meet the individual requirements of any contractor or architect, but the whole procedure must be considered from a totally different viewpoint, when the object is to follow a Quantity "System" for all, and which requires the personal support of the architect, the owner, and the contractor.

My aim and hope is still, as it has always been that when a Quantity System is once started in this country, it shall be at least equitable and consistent, otherwise failure must result, and this would indeed be a misfortune after so many years of preliminary effort.

It is generally known among architects that I am always available when desired, and glad to place my experience with the Quantity System at the disposal of anyone who is sincere in their efforts to bring about better contract methods. Some facts appertaining to the Quantity System, and my interest in it, is perhaps best illustrated by the report made to the San Francisco Chapter, A. I. A., upon the return of the Chapter delegates after the convention of the A. I. A. at New Orleans in December, 1913, where a report upon Quantity Surveying was presented. The San Francisco delegates' report upon the convention proceedings contains the following, viz.:

> "The Report on 'Quantity Surveying' developed the fact that twenty years or more of the endeavors of our fellow member, G. Alexander Wright, to have introduced in the country the system of Quantity Surveying, have failed of any official recognition, and that the credit due him for its present status in this country is likely to be diverted to others. Numerous literature in the form of addresses, papers, pamphlets, magazine articles, etc., through a period of more than twenty years over Mr. Wright's signature, a sort of missionary period of constant, energetic, self-sacrificing endeavor to an ideal, for public benefit and service (in which there can be to him no material profit), should insure to him just recognition and honor, now that the advantages of the system are likely to produce the good for which he has so devotedly labored."

In conclusion, it would appear that the Quantity System is now of sufficient importance to the profession to justify the early appointment of a special committee to consider it. Its members should have had the advantage of experience in the practical workings of the Quantity System, and authority to consult surveyors trained in that particular work, but having experience in American methods, with perhaps one or two expert estimators. It can be only through some such co-operative committee that the matter can be either properly presented or understood.

Yours very truly,

G. ALEXANDER WRIGHT, Architect.,

Honorary Member Quantity Surveyors' Association, London.

Editor's Note.—Reference may be made, perhaps, to the new 1916 edition of "Kidder's Handbook," page 1555, which gives a very concise description of the Quantity System and its practical application to building contracts. We shall hope in a future number to make some extended reference to this.

As we go to press we learn with much interest that bids for the new Parliament buildings at Winnipeg, Canada, to cost $4,500,000, will be received under the Quantity System of Estimating. This step in advance is regarded with much satisfaction by those who favor better estimating and contract methods, and it will undoubtedly prove to be a great object lesson not only in Canada, but in the United States.

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Wooden Shingles that Resist Fire

Wooden shingles that resist the spread of fire, instead of aiding it, have been produced experimentally by chemical treatment at the Wisconsin Forest Products Laboratory. The air-dried shingles are treated with a solution of borax in water, kiln-dried until the moisture is reduced to 10 per cent, then treated with a zinc chloride solution, and after again drying are found to be so impregnated with an insoluble sodium borate that soaking two weeks in running water does not destroy the fireproof quality imparted. Though the treated wood may be made to burn slowly, it does not burn with flame, the cell walls being coated with the infusible salt. The solutions must be applied under heavy pressure, and the process is expensive unless large quantities of shingles can be treated.

LOOKING OVER THE SKYSCRAPERS, TOWARDS THE BAY, FROM THE LIBRARY, SAN FRANCISCO COMMERCIAL CLUB

New Home of San Francisco Commercial Club

By B. J. S. CAHILL, A. I. A.

A COMMERCIAL CLUB is coming to be a necessary institution in all American cities. Being essentially a club for business and professional men whose offices are in the heart of a great city, the club house must also be in the heart of the city and consequently in some office building of large area. Since such a club is essentially a noon-day club—a lunching club, if you like—there are obvious reasons why it should be placed near the roof. But there is another reason which has come to make the top of a tall building the right home for a commercial club, and that is the need of a fine commanding view of the city and its surroundings. The commercial club of today has somehow come to be a sort of informal expression of the social side of a city's business life that cannot so well be expressed by the official formality of the mayor's office or the Chamber of Commerce. When the representatives of any great business venture to do with banking, transportation or investments visit a city, the Commercial Club is the natural place to foregather in comfortable informality. Now, since such groups of men as we mention are often firstcomers and entirely unacquainted with the layout of your city, it is plain that the top floor of a tall building giving a panoramic birdseye view of the city and its surroundings is an exceedingly important advantage.

I recall some interesting discussions at the Portland Commercial Club which were settled by merely looking out of the window! It is this "living map" of the city and its setting that is as important in a Commercial Club as a painted map in a railway or a real estate office.

The club idea originated in England and is such a thoroughly English institution that the very word club is used also in Berlin and Paris, and, for aught I know, Petrograd and Przemysl.

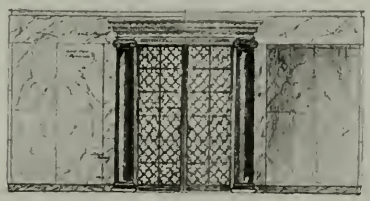
The original club began in a coffee house and, after all is said and done, is still a place where men eat and meet. In America, where everyone is busy and a life of languid leisure is practically unknown, the original traditions of club life are a good deal modified. The American cannot disso-

ENTRANCE, COMMERCIAL CLUB, SAN FRANCISCO
WALTER H. RATCLIFF, JR. ARCHITECT

ciate business from leisure, and the club on this continent, no matter how far it patterns itself on Pall Mall, is at bottom a sort of business exchange anyway.

A Commercial Club is therefore the most genuine and legitimately American of all our types of clubs—if we except the athletic variety. It has no pretensions and lives up to its name and purpose.

Bearing all the facts in mind, it will be seen that the remodelled Commercial Club in the top floor of the Merchants' Exchange building just meets the needs of this live and typical institution to a nicety. While the mechanical problems and the planning arrangements needed to convert a couple of office floors into a club call for both intelligence and training, one is inclined to think that the real test of merit comes in pitching the whole scheme of interior design in the correct key; that is to say, in making it neither too sumptuous nor too austere.



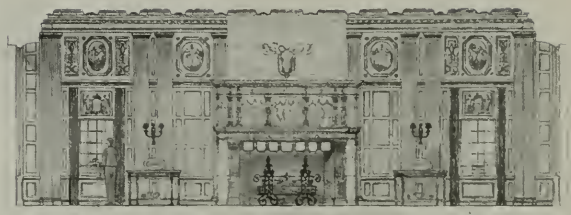
The shell work of a steel frame office building imposes conditions quite impossible for purposes of architectural grandiloquence, nor is such a thing desirable in a day club composed mainly of business men. The architect, Mr. Ratcliff, has done well, therefore, to adopt the cosy informal English Renaissance style that so well accommodates itself to the picturesque irregularities of a made-over building.

Withal that the design is unpretentious throughout, it is instinct with fine feeling and extraordinary good taste.

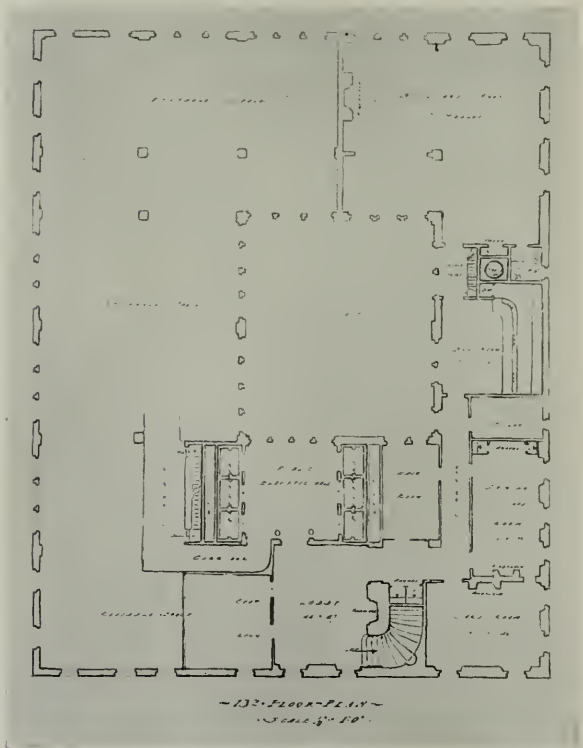
The entrance portal, rather unnecessarily wide, we think, at once announces the entrance from the cold marble office hall to the warmth and comfort of a club. The whole interior is suggested in this charming bit of mahogany and bronze. The lobby, with stairs and fireplace, is full of a kind of charm that most of our architects are unable to impart; it is so elusive and subtle. It is found in Italian and English work, but forms no part of modern French practice, and yet without it architecture is too often cold

READING ROOM, COMMERCIAL CLUB, SAN FRANCISCO
WALTER H. RATCLIFF, JR. ARCHITECT

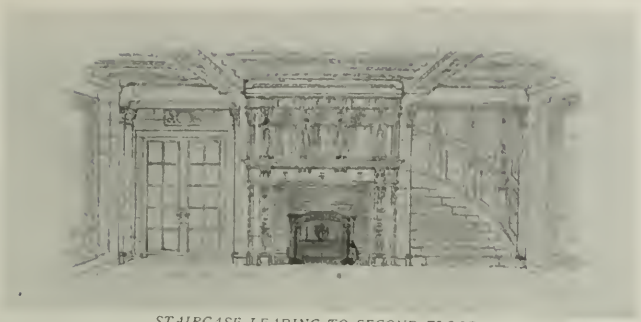
READING ROOM, COMMERCIAL CLUB, SAN FRANCISCO
WALTER H. RATCLIFF, JR. ARCHITECT



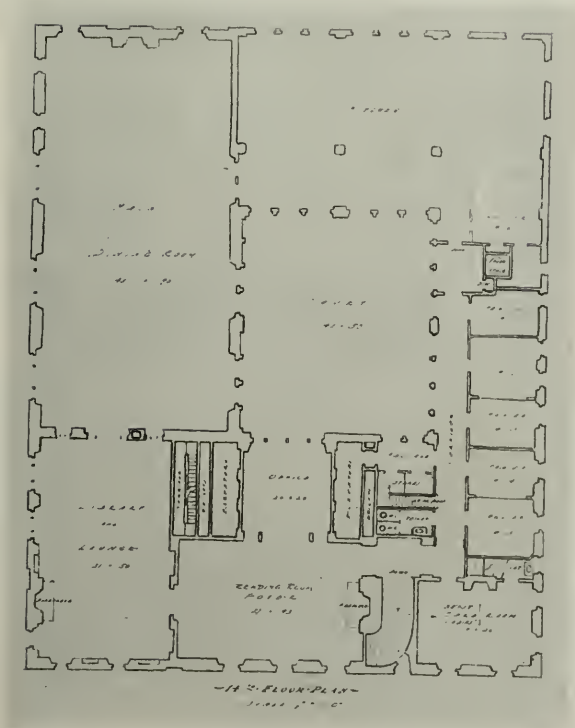
SOUTH ELEVATION OF READING ROOM



THIRTEENTH OR FIRST FLOOR PLAN, COMMERCIAL CLUB, SAN FRANCISCO
Walter H. Ratcliff, Jr., Architect



STAIRCASE LEADING TO SECOND FLOOR



FOURTEENTH OR SECOND FLOOR PLAN, COMMERCIAL CLUB, SAN FRANCISCO
Walter H. Ratcliff, Jr., Architect

LIBRARY, COMMERCIAL CLUB, SAN FRANCISCO
WALTER H. RATCLIFF, JR. ARCHITECT

DINING ROOM, COMMERCIAL CLUB, SAN FRANCISCO
Walter H. Ratcliff, Jr., Architect

and charmless. The reading room and library upstairs have the cosy comfort and the simple elegance of a gentleman's home. The big dining room has the first quality desired in any room, big or little, and that is proportion. This room was designed for oak, but was changed to mahogany. It is difficult to avoid glare in the lighting of a dark-walled room because of the lack of diffusion and the intense contrast between wall and window. This room would be improved in lighting by the introduction of adequate lambrequins and window drapes in the upper part, leaving the lower space open for the view. The fine mantelpiece at the end was meant to have large antlers in the center. At present one feels that this bare rectangle of masonry of the chimney proper above the mantelpiece seems rather stark and awkward against the small scale finish of the walls and ceiling. It seems to

KITCHEN, COMMERCIAL CLUB, SAN FRANCISCO
Walter H. Ratcliff, Jr., Architect

need a veil of color or to be screened or overlaid with wood so as to become a part of the walls proper.

We have made no allusion to the many minor problems solved. The best proof that they are solved lies in the fact that, though a remodeled scheme, no detail in the whole club needs explaining away nor apologizing for as a makeshift. It all appears as a deliberate and well-ordered plan, and we think there is no other club house on the coast more charmingly designed nor more nicely adapted to its proper purpose.

* * *

Protection of Concrete During Hot Weather

IT IS not at all uncommon to hear prominent engineers say that concrete placed during periods of extreme hot weather is in general weaker than that placed in winter, says the Contractor, if the materials are heated and the surface protected after placing. If it could be forcibly impressed on the minds of inspectors and contractors that protection of concrete surfaces from the direct rays of the sun during hot days is just as important as protection against cold in winter, this probably would not be true. There seems to be an erroneous idea prevalent among construction men that concrete should harden as rapidly as possible. They believe that concrete dries out in hardening similar to the action of lime mortar and therefore they provide no protection while the concrete is hardening. This state of affairs is no doubt due to the passing of many masons and helpers from their original field into the concrete field. Some of these so-called practical men will not be converted from this erroneous view and a vigorous campaign should be started against such ideas.

The very name "hydraulic" as applied to cements conveys the idea that water is required in the process of hardening. Exposed surfaces of fresh concrete should be protected from the direct hot rays of the sun by boards, building paper, or tarpaulins until final set has taken place; after this it is important that the concrete be kept moist for a period of a week or more after placing. If not kept moist and protected, there is danger of the water which is required for the process of setting and hardening becoming evaporated and the concrete "dried out" before the cement has set. Concrete that has prematurely set or dried out is never as strong as if kept moist while setting, and many times ultimate failure is laid to poor cement or aggregate when in reality the cause was lack of water while hardening.

The statement that the strength of concrete increases with age does not hold good if sufficient water is not supplied throughout the first stages of the hardening process. If the moisture is withdrawn from the concrete the increase in strength is arrested; and even if water is applied later it will do no good toward increasing the strength.

When concrete is unprotected and hardens rapidly, the tendency toward contraction is greatly aggravated and the outer surface is very likely to become "crazed" or covered with "hair cracks" and rendered otherwise unsightly. If concrete dries rapidly the color will be much lighter than if kept damp and allowed to harden slowly.

After an exposed concrete surface has received its final set, it should be covered with burlap (not cement sacks, they are too valuable) or wet sand spread over the surface to a depth of about one inch and kept wet by sprinkling. Where surfaces are not exposed but the concrete section is thin, the forms are likely to be very light, and if exposed to the sun will dry out quickly and absorb moisture from the concrete next to the forms. For this reason it is important to see that such forms are thoroughly soaked daily for a period of a week or more. Impress upon the contractor, inspector and workman that water is an essential element in the proper curing of concrete and better concrete will result.

The Pergola—Its Mission

WHEN we speak of point lace, we instinctively think of Ireland; the same is true of tulip bulbs and Holland, both in their own way suggestive of beauty, but to Italy, the land of art and architecture, appropriately belongs credit for the introduction of the pergola.

The Pergola originated there. It was an added note of beauty to the general plan of Italian home and garden architecture. Other features that recommended the structure were undoubtedly recognized by the Italian, but its artistic possibilities were considered the most important.

Without losing sight of the chief reason for its origin, it remained to the more practical Britisher to adopt and develop the pergola from a different viewpoint.

Its restful and satisfying influence was in strict accord with his idea of home environment; sheltered and protected from the highway, it afforded the family the seclusion which characterizes the British home, while it placed no restraint whatsoever upon the native enthusiasm for outdoor life.

In America, up until recent years, the pergola had a much harder task in finding popular favor. The free and easy manner of the people was in direct contrast with that of their European cousins and consequently the proverbial front porch was not going to be readily superseded.

Usually situated within hailing distance of the sidewalk, without even the semblance of a hedge-fence between, the front porch permitted of the exchange of greetings and of discussion of the live topics of the day with passing friends. The disadvantages of such a congenial rendezvous were thus, for a time, overlooked, and in the meanwhile the pergola made but slow progress.

A keener appreciation of the benefits to be derived from a closer association with nature, however, particularly noticeable in America, emphasized the merits of the pergola and practically resulted in the abandonment of the old style porch, which, with its solid roof, unduly darkens the entrance and excludes both sunshine and fresh air, which would otherwise find their way into the first story of the home.

Thus, in line with the modern idea of sanitary environment, we find provision made for the dignified and artistic pergola-porch, the sun parlor, the solarium, the outdoor living-room, sleeping-chamber and the pergola, a boon which is also enjoyed by the city dweller, the present-day apartment building, being equipped with one or more of these features considered essential in the matter of right living.

In design the pergola varies to as great an extent as do the materials with which it is built, nevertheless the element of beauty is always present. The square stone piers, supporting a frame work of timber, is responsible for the

THE POSSIBILITIES OF CONCRETE FOR THE PERGOLA ARE SHOWN HERE

PERGOLA CONNECTING LODI HIGH SCHOOL GROUP
Stone & Wright, Architects

A RUSTIC PERGOLA

THE PERGOLA ADDS CHARM TO BOTH HOUSE AND GARDEN
C. W. Dickey, Architect

grandeur of the Italian structure. Rustic work, which never fails to attract and please the eye, is generally followed in England, the pergola there consisting of larch poles, supported on stout wooden posts, while the concrete pergola is naturally of a distinctly American type.

Concrete also appeals to the American. Its permanence is undisputed. It may be molded to any detail, no matter how fastidious the prospective builder may be, and its cost is not prohibitive to the home-owning citizen. It may be dark or it may be light of color, much depends upon the materials with which it is made, but if care is exercised in their selection as is necessary, in choosing the pergola site, and again necessary in planting the vines and creepers around the columns, so that the structure becomes a part of and harmonizes with the home itself and the surrounding trees and shrubbery, then the possibility of spoiling the landscape with a structure of "lifeless" appearance is readily overcome.

MARBLE AND BRONZE STAIRCASE, ORPHEUM THEATER, LOS ANGELES
G. ALBERT LANSBURGH *ARCHITECT*

Better Design of Reinforced Concrete

By M. T. CANTELL, Architect

REINFORCED concrete is a combination of Portland cement concrete and steel, two of the most important materials used for construction, which if used separately have each their advantages and disadvantages. If combined, of the right quality and properly proportioned, the resulting material will have the advantages of both and the disadvantages of neither.

Concrete alone has great strength in compression, its crushing resistance when a month old being approximately 2,500 pounds per square inch. It is very durable in any position, is practically everlasting, costs nothing for maintenance, and its strength increases with age; but it is of little value in tension, its ultimate resistance being about 200 pounds per square inch. It is a good material to resist heat, but it is not elastic or ductile, and owing to the lack of these properties and to its weakness under tension, it will quickly develop cracks in resisting the slightest contraction which takes place under variations of temperature. These cracks, however small, will destroy the slightest tensional resistance the concrete might otherwise offer. Consequently concrete alone can be used for such structures or parts of structures that are in compression, and this, in many cases, necessitates a very large mass of concrete, and therefore a much greater weight and demand on space than is desirable. An obvious disadvantage of plain concrete is its great bulk and consequent weight and demand on space.

In steel we have a material of great strength in both compression and tension, its ultimate resistance being as much as from 60,000 to 100,000 pounds per square inch, but its strength diminishes with age. This is chiefly due to oxidation which takes place on exposure to moisture, acids or to atmospheric influence. This is very detrimental to its strength, even 1-40 of an inch of rust on a 3-4-inch bar will diminish its strength by 13 per cent. Another disadvantage is its excessive expansion and loss of strength under high temperature. Steel gains in strength with heat up to 500 degrees F., beyond this it rapidly diminishes in strength. With a rise of temperature from the normal to 500 degrees, a beam 26 feet long will expand one inch. With a rise of 1,000 degrees, it will expand one inch to 13 feet. In ordinary house fires the temperature seldom exceeds 1,000 degrees, but in large buildings it is known to have exceeded 2,500 degrees. This first attracted particular notice during the inspection of the ruins of the great fire at Baltimore in 1904. It was there noticed that in some of the large buildings brass and cast iron were entirely fused. Fusion had also taken place on the corners and angles of certain steel work. Here it was also noticed that concrete formed a far better fire protection than terra cotta, which has many times been further exemplified since that date. This is owing to the expansion of terra cotta being approximately twice that of steel. Under the above conditions excessive stress is set up in beams, stanchions and frame structures due to the resistance of their loads and fixed ends preventing longitudinal expansion. This stress far exceeds what the steel is capable of resisting, especially in its weakened condition, the beam or stanchion therefore buckles and causes collapse of the structure. Collapse is often due to the deflection of beams causing eccentric loads of the columns which set up a stress far in excess of what they are capable of resisting.

Strength, Toughness, Rigidity

In reinforced concrete properly designed and made, the two materials act together as one. An important point in designing is to see that the materials and methods are such as to insure this being the case. Consequently we have the strength, toughness and rigidity of steel, the appearance of stability and strength, the steel permanently protected from oxidation, no loss of strength with age, a saving in the cost of construction, speedy erection, very little or no charge for maintenance, and a material adaptable to all forms of architectural and structural work. Furthermore, numerous experiments together with the lapse of time and very severe tests to which it has been subjected in existing structures have proved conclusively its absolute reliability for the construction of structures above ground, below ground and under water, for the workmen's cottages to millionaires' mansions, for business premises, hotels, churches, theatres, public buildings, electric power stations, gas works, factory chimneys, reservoirs, water mains, conduits, sewers, grain elevators, roads, bridges, breakwaters and sea-defense works, and numerous other purposes.

Of the valuable properties reinforced concrete may possess, few will exist if the work is not properly designed and executed. The latter is quite as important as the former, for if the greatest of care is taken with the design and careless supervision given to the construction the result may be as bad or probably much worse than if the work was badly designed. In fact, a poor design well constructed may give a much better result than a good design poorly constructed. The supervision should include careful inspection and testing of all the materials; attention to the preparation, erection and removal of the forms; to the gauge mixing and placing of the concrete; to the size and placing of the reinforcement according to the drawings; to the position and condition in which slabs and beams are left unfinished at the end of a day's work; to the condition of unfinished work before its continuation or completion; and to the protection of newly finished work from building operations and inclement weather. All these points are of the utmost importance if we aim at the best possible results. It is, therefore, absolutely necessary that constant expert supervision be given to the construction.

In designing, strength is generally considered the chief point. Strength, however, should always be considered together with economy. This has not been done in the past to the extent it should have been and the neglect has been very detrimental to the progress of the work. It has given the public the impression that this method of construction is more expensive than brick, stone or steel, but it is not; there is a great saving in cost on large structures and also on small ones, providing there is sufficient of detail to keep down the cost of form construction. Economy in design has sometimes to be considered from two points of view—the engineering and the architectural—these will not always coincide. The most economical engineering structure would have a certain arrangement of beams, slabs, columns, walls, etc., all spaced and proportioned in the most efficient manner and with a definite percentage of reinforcement all determined with due regard to the loading and with a view to obtaining the strongest, most satisfactory and cheapest structure. But if these engineering points were the only ones considered by the architect, the result in some cases would be very uneconomical. The engineering structure may be considered either a plain mass or a skeleton framework devoid of architectural embellishments. The architectural structure is the engineering structure made more presentable by the addition of fittings and embellishments. Econ-

omy on the engineering side is purely structural and in a building it is attained, or partly attained, by keeping the floor slabs thin, by a free use of beams or columns and keeping the beams thin and deep, also by graduating the columns in size according to their different loads.

Architectural Features

This from an architect's point of view might turn out very uneconomical as it might involve so much additional finishing in the way of cornices and other details, also extra expense to secure efficient light and ventilation than would be the case if thicker slabs with fewer and more shallow beams were used. Therefore, if we wish to design economical structures, there are many factors to consider,—the most important of these, however, are the ones which influence all structures and should be considered by both the architect and the engineer where these are both concerned. They are: (1) The ratio of breadth to depth of beams. (2) The percentage of reinforcement. (3) The general arrangement of layout of beams and columns. In regard to the first factor, the most economical section for rectangular beams is when the breadth is about one-third the depth, but this gives a deeper beam than is desirable for most purposes. To have less depth means an increase of width, which is placing the concrete in a less effective position. Consequently, a larger section would be required. The increase in volume and cost, however, is not great until the width exceeds 0.6 of the depth, which is a good proportion for general purposes and is the one largely adopted. The depth of a beam with double reinforcement is less than would be required for a beam with single reinforcement. The second set of reinforcement is added to assist the concrete in taking the compression owing to the depth being insufficient to provide enough concrete for the purpose, but compression reinforcement is always very lightly stressed, seldom to more than 7,500 pounds per square inch, which is due to the fact that it cannot be stressed more than m. times, the stress in the concrete surrounding it where m. equals the ratio the modulii of elasticity of the concrete and steel. Consequently, a comparatively large proportion of steel is required to make good for a small decrease in the beam's depth. Beams with double reinforcement are very rarely as economical as beams with single reinforcement. Their cost will vary with the ratio of breadth to depth, the percentage of steel and the ratio of top reinforcement to bottom reinforcement.

In regard to the second factor, i.e., the percentage of reinforcement. Attention to this is of the utmost importance, great waste is often occasioned through an excess of steel being used. There is certain percentage that will give the most economic section, it is that which is such as to allow both the steel and concrete to be stressed to their allowable limits at the same time. For instance: if the allowable stress for the steel is 16,000 pounds and for the concrete 600 pounds., which are the usual values, the concrete and steel should be so proportioned as to allow these stresses to exist when the structure is fully loaded, we then get the full value out of each material. If one of these materials is understressed, it means there is an excess of that material and consequently a waste. Now, for different classes of concretes there will be different percentages of steel required to give this result. The difference will depend on the difference in the strength and on the ratio of the modulii of elasticity of the concrete and steel. For hard stone, granite or gravel concrete the modular ratio equals 15 and the economic percentage of steel for the above stresses equals 0.675. For broken brick or limestone concrete the modular ratio is 18. For cinder concrete it is 30. Now from this it follows that in a beam,

floor, retaining wall, or any part of a structure under a bending stress and built of hard stone concrete, the sectional area of the steel for single reinforcement should be 0.675 per cent of the sectional area of the concrete. If there is more than this it will not be fully stressed, therefore the excess is waste. If there is less than 0.675 per cent, the concrete cannot be fully stressed unless the steel is overstressed. The reason for this is as follows: In any member of a structure under a bending stress the total tension equals the total compression and the tension at any distance from the neutral axis is equal to the compression at the same distance the other side of the axis, also the stress in the steel at any point is equal to the stress in the concrete at the same point or at the same distance from the axis multiplied by the ratio of the modulii of elasticity. Therefore, if this ratio is 15, the stress in the steel is 15 times as much as the stress in the concrete immediately surrounding it, and it cannot be stressed more under any consideration unless the stress in the concrete is increased. This also is why the compressive reinforcement in doubly reinforced beams is always so much understressed. Now, if the axis is at the half depth, the stress in the steel will be 15 times the maximum stress in the concrete, which is little more than half its allowable limit. Therefore, as the steel takes all the tension, much more steel is required than if it could be higher stressed, but to be so it must be further from the axis. The exact distance will depend upon the ratio of elasticity and the allowable unit stresses. The higher the steel is stressed, the less will there be required to take the whole of the stress with the same quantity of concrete, and the further will the steel be from the axis. From this it is evident that when the steel and concrete are fully stressed the neutral axis must be somewhere above the half depth and it approaches the compression surface as the stress in the steel increases. Therefore, the position of the axis varies according to the value of the ratio of elasticity and the proportion of steel to concrete, and as the area of steel and concrete depends upon the intensity of stress, we may say that the axis varies according to the value of the modular ratio and the proportion of area of steel to area of concrete. Also, the maximum stress in the concrete is to the stress in the steel as the distance of the axis from the compression surface is to distance of the axis from the steel.

The nature of the materials is a very important consideration. Where strength is the chief point, the concrete aggregate should be gravel, broken granite, trap or similar hard igneous rock. For work up to three inches thick, the aggregate should be graded from three-sixteenths inch to three-eighths inch, and up to three-fourths inch for work six inches thick. Above this thickness it may be graded up to one inch, but not larger. The sand should be quarts, clean and quite free from ligneous organic or earthy matter, and from alkaline or acid pollution. Sufficient should be used to completely fill all the voids in the aggregate, with a little in excess.

The cement should be Portland, ground exceedingly fine and in all other respects comply with the standard specification and methods of testing.

The reinforcement should be mild steel. High carbon steel should not be used as its yield point is not so reliable as that of mild steel. It should have an ultimate strength of not less than 60,000 pounds per square inch with a yield point not lower than 50 per cent of the ultimate strength; it should be free from seams and foundry scale and under no consideration should it be painted or galvanized, as this prevents the adhesion of the concrete to the steel and thus destroys the bond upon which the theory of design depends.

The American Institute Schedule of Charges

AMONG the reports of committees presented to the recent convention of the American Institute of Architects, one containing elements of more than usual interest was that of the committee on schedule of charges. The feature of this report which will attract greatest attention, and except which it follows closely previous reports, is that treating of a method of compensation in vogue in some sections of the country, based on a fixed architectural fee representing the value of the services rendered professionally by the architect himself, plus a sum which bears a fixed proportion to the actual cost of producing the drawings, together with office and other incidental expenses, and including cost of superintendence of the work.

The adoption of such a method of charge is, of course, the outcome of a feeling that the percentage system is illogical and liable to be unfair either to the architect or to the client, depending upon the nature of the services rendered, the materials of construction employed, and the locality in which the given commission is executed. The defects of this system must be conceded, and yet we can see grave objections to an abandonment of it by the profession generally for the plan proposed. To our minds, one of the greatest advantages now possessed by the individual architect over the members of other professions has been the fact that within recent years he has almost invariably been selected for his professional attainments, and the question of compensation has not entered into considerations affecting such selection. This is due to the fact that it has become generally understood that the fees of architects of standing are uniform, and whatever competition has existed among members of the profession has been a competition in services and not in price. The new method proposed inevitably introduces a variation in charges. Not only will the fee for personal service vary, but so will the cost of producing drawings and writing specifications. Even the items of incidental expenses and cost of superintendence will lack uniformity. This is clearly demonstrated by the fact that the actual cost of executing a commission, as shown by the records kept in one architect's office, will approximate three-fourths of the total fee, as now fixed by percentage, while other offices show a much larger proportion of profit; or, on the contrary, in some instances, a smaller one.—American Architect.

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A New Marble in Montana

A new kind of marble has been discovered in great quantities in Livingston, Mont., by H. M. Sitherwood and Harry Kearns. So strong is its resemblance to mahogany it has been called "mahogany" marble, as, despite the many various kinds of marble now being quarried, such a name has not been given any other variety. The claim lies three and a half miles southeast of Livingston on sectional lines and is connected by a good road. The claim consists of 200 acres, and accompanying the marble are said to be big deposits of red and yellow ochre in addition to considerable onyx. No effort has thus far been made to ascertain the depth of the marble formation. Samples taken from the surface and sent to Denver took a remarkably good polish for surface stone.

Advertising that the Architect Files for Use

UNDER the above heading Mr. Richard H. Millson, an architect, has some interesting things to say in a recent number of "Printers' Ink." The following extracts undoubtedly will be appreciated by the profession and may serve to give the manufacturer some new ideas for the future. It should impress him, too, with the necessity for properly arranging and wording his advertisements so as to command the attention of the architect and the engineer:

There is one idea which seemingly exists in many manufacturers' minds, and which must be dispelled once and for all. The idea is this—that the architect is by nature, training and inclination a natural and particular enemy to manufacturers in general. This is not so; and I would submit the following proof, with the suggestion that it serve as a means of practical reflection for those who seem to consider the architect their evil spirit.

The architect, in order to accomplish anything at all, must have information on all the various products that go into the construction of his work. That, it seems, must be patent to all. This fact allowed, it is unreasonable to say that the architect could be the enemy of any particular manufacturer who really conveyed vital information of his product into the office through his advertising effort.

In a subject so broad, attention must be given from the start toward the elimination of literature which does not efficiently and promptly give all the facts of the product advertised. This is of the first importance, and at once gives us a clue to the reason for this evil-spirit idea.

It may be summed up much like this, I think: The Atlas Automatic Peanut and Candy Supply Company, manufacturing a device for supplying fresh peanuts to individual offices in skyscrapers, sends a pamphlet telling me of the great advantage to be gained in using its new and improved system. This is all it does tell me amidst a mass of frills about decreased size of pipes, fifty pounds more pressure, and many more abstract things. Now, the Peanut and Candy Engineering Company, a rival concern, sends me, a little later on, a neat, simple booklet laying the facts of its system before me briefly, with drawings of typical layouts and necessary data for the practical consideration of its plant in the drawings of any project that may come to hand. Is it unreasonable, then, I ask, that I throw The A. P. & C. Company's packet into the waste basket, and immediately become interested enough to give some attention at the time to the P. & C. Engineering Company's efforts, and further to have it put in my files as containing facts against the time when I shall need them?

Now we get down to the reason for the evil-spirit idea. A little later on, I have a commission on hand in which it is insisted that fresh peanuts must be supplied to each office.

Head Draftsman says, "What are we going to use?"

"P. & C. Engineering Company's stuff," says I. "You'll find it in the files."

"Fine," says he, "everything is here and we can get a mighty good idea of what we want to do from this stuff."

P. & C. Engineering Company gets the business. Atlas Automatic hears of it too late. From then on, I am one of that company's "hard nuts," "evil spirits," etc. Unfortunately for everyone concerned, the Atlas people might have an improved system, but they didn't make it clear to me and they failed to break into my files from a lack of appreciation of the fact that an appeal to an architect must be, first of all, a practical proposition.

The fact is, literature properly put together, is as useful an instrument as many others the architect works with.

With reference to advertising in professional journals and periodicals, Mr. Millson writes:

This method of advertising is excellent when considered as an adjunct to the work such as has been outlined. A great deal can be done to improve the character of this work, the space for which is paid for in good hard money and therefore must not be allowed to become just a mere waste. I would suggest that advertisers consider this method as a reminder, as it were, connecting thereby the minds of the readers with other more detailed literature. It is a great opportunity to keep the name and character of a firm persistently before the profession, and is apt to cut that groove into the reader's mind which is so valuable an asset to manufacturers.

Some suggestions and examples as to improving this branch of work would now be in place, I think. First: consider the form of the printed copy when made up. Let it be "set" with taste. Don't use all the various types that can be found in the printer's shop; get one good type and keep to it consistently.

I have been asked many questions upon what I would consider the proper way to improve various firms' advertising, and for suggestions as to the solution of some particular difficulties in this direction. Of these, I shall cite some typical cases and attempt to offer some suggestions which, I am sure, would tend to help the writers of these advertisements to see their position in a new and more satisfactory light.

The first case I shall consider is that of a firm handling automatic sprinkling equipment for fire protection in buildings. This firm has a number of facts to put before the architect—the efficiency and installation of its product, etc. Provision for this sprinkler protection must be made in the *plans* of the building. One cannot wait until the structure is completed. Here is a case where there surely is much to tell the architect in terms of pure fact, and I would suggest that no better way could be found than the publishing of a book on "Sprinkling Equipment," for the architect's working library. Viewing the problem in this way, as a text-book idea, the idea immediately suggests itself that the facts, as told, should be supplemented by careful, well-considered drawings that would bring closer to the surface, in the architect's mind, the main points of the written remarks. In further suggesting a plan of campaign in this case, I would think it well to carry on persistent advertising in architectural and building publications, as this is one of the best means of keeping the name of the concern continually before the eyes of the profession. As a final remark I would lay stress on the suggestion that an attempt be made to stamp the character of all advertising with the identity of the firm.

The next case, a very interesting one, is that of a firm of varnish manufacturers. This firm seems to have very little faith in advertising of any kind, and apparently has an idea that it can reach the whole of the architectural profession through their representatives. This firm, I venture to state, is greatly mistaken in its lack of faith in advertising, and I am sure that the very facts which its representatives are sent out to tell architects could be compiled in literature written and built in the right fashion that would succeed in getting the architect interested. In this particular case, I cannot too strongly condemn many such pamphlets that are already spread broadcast on such products as varnishes, finishes, paints, etc. They do anything but interest, for they have no character and detract by this very negativeness from any force that might have been put into the telling of facts.

The next inquirer is a company whose product is about fifty per cent higher in price than those with which it competes. The company claims superior standing. Its advertising matter then should surely afford a fine opportunity for forceful copy, and I can suggest nothing better than "going to it." But here also is a case which calls for warning, "don't be cheap." The very nature of the argument which it is intended to drive home is the fact that this particular product is far ahead of its class in every way, and that there are many good reasons for the price of the product being higher than anything else in the market. Looking this square in the eyes, we must see that the appeal must demonstrate immediately, by its forcefulness and character, value and superiority. Any appeal which does not contain within itself the essence of quality cannot hope to succeed in such a case as this.

The next house asking advice is doing some good work, but is evidently also making some big mistakes. It asks me, "Does the architect lean more to the 'artistic' advertisement, or to one which is 'fairly plain,' but which goes into mechanical detail?" Right here, I want to point out the fact that those who ask such a question make it plain that they do not understand in the most elementary way such terms as "artistic," "fairly plain," etc. If by an "artistic" advertisement is meant some pretty arrangement to hang up before our eyes, as a constant stimulation of our esthetic senses, a great mistake has been made. An architect is an artist, *but he is a practical one*, and must have a good business head. My suggestion in this particular case would be to eliminate entirely the idea of there being two classes. Let facts and technical data be set down with good taste and simplicity. Strong character and individuality will result.

Another firm wants to know: "What class of trade papers do architects read advertising in—ones with pretty pictures, or ones of a more technical nature? What is the architect's attitude toward advertising, does he look upon it as a nuisance or a joke?" This is too much! I might ask this particular firm what it imagines an architect is? Nevertheless, I will attempt some answer to the questions:

My only answer to the first question is that it must be realized that the artistic side of an architect's thinking does not partake of the pretty picture variety, but is part and parcel of a well-ordered system *of arranging a compilation of things in the best proportioned fitness to one another*. This is a phase of true art. Before this firm's advertising can hope to be successful with architects, a complete reversal of this unthinking attitude must be made. On the question of whether architects find advertising a nuisance, a help, or a joke, I have already said much.

The great fact dominating the whole subject of making advertising reach an architect is this: An architect is a man having a huge amount of mechanical work to do toward the end of creating something beautiful. The result of this work must be efficiency in a utilitarian way, without losing the character of beauty.

If manufacturers will clearly recognize the necessities of the architect's work, and then will strive faithfully to help him in his work, a vast amount of advertising literature will take on a greatly increased effectiveness.

Making the Contractor Scapegoat for Engineering Inefficiency

ENGINEERING RECORD reports that it has received a copy of specifications of the sort that should have gone out of fashion long ago. They will deter any responsible parties from bidding on the work and will cause trouble for the owner, the engineer who was ignorant enough to prepare them, and any contractor foolish enough to sign a contract which includes them. It seems that repeated condemnation on the part of those interested in good work and fair dealing has no effect on certain persons with a quasi standing as members of the engineering profession. Cannot contractors solve the matter by refusing to bid on specifications of this sort and forcing their authors to deal with irresponsible bidders until these men or their clients have learned this lesson so that it will not be forgotten?

The phrase "to the satisfaction of the engineer" occurs constantly in the document and is used as a lazy substitute for stating in plain English what the engineer wants and how he proposes to get it. The specifications provide that the engineer may take charge of the job with his own crew and mix and place concrete at the contractor's expense, at the engineer's direction. If the engineer doubts the ability of a contractor to do concrete work when the contractor understands what is wanted, he is betraying the trust of his client to enter into an agreement with that contractor. Or does the engineer doubt his own ability to get any contractor to do what he wishes?

These specifications contain the outgrown provision that bids by other contractors may be invited for any extra work in connection with the contract, in case the contractor and the owner cannot speedily agree on the payment for such extra work. A definite provision for payment for extra work at cost plus per cent, or according to some other approved method, is always preferable to this clause. Furthermore, interpreted in accord with the general tone of the specifications, any contractor would be justified in assuming that this clause would be held over his head as a club in making prices for extra work.

The person who fathered this document further requires that reinforced wall concrete shall be placed in layers six inches thick, each thoroughly tamped before another layer is placed. This stamps him as either ignorant of concrete construction or as seeking to carry out in the field experiments that should be made in the laboratory. The specifications further state that the reservoir walls—the main concrete item, containing about 900 cubic yards—must be poured continuously, and provides cash penalties for delays due to breakdowns which are so severe as to require duplicate mixing plants. This is an unnecessary expense on such a small yardage, and entirely unwarranted in view of the fact that such a breakdown could have no serious effect on the finished wall if any of the several methods for bonding the old and new concrete were used. These methods would be much cheaper than the extra expense necessary to insure continuous pouring, and probably would not even need to be used. This penalty feature for a one-and-one-half to three-hour breakdown is apparently due to inexcusable ignorance.

The all too usual clause throwing responsibility on the contractor for errors made by the engineer in gathering the data on which bids are asked is, of course, inserted at the end. The engineer says in effect that he

thinks he wants certain things done—certain quantities of certain materials moved, or furnished and placed—but that if the contractor finds that the engineer wants something else the contractor must pay the difference. In normal times an extra and unnecessary sum, added to the bid, comes out of the owner's pocket to pay for this deficiency of his engineer. Either the engineer is not paid enough to make proper investigations of the site, which may be either his fault or that of the owner, or the engineer says, in effect, that he does not know his business and cannot determine the ordinary conditions of the work with enough certainty to predict its approximate cost. The engineer should have the sense and backbone to stand on his design and estimate. If extraordinary conditions, such as could not possibly be predetermined at a reasonable expense, are found, no one can blame the engineer, while the contractor is entitled to be protected against loss. Usually the insertion of this clause merely means that the contractor has to assume the cost of any mistake, however gross, in the engineer's work, although he is seldom given time, and should not be put to the expense of thoroughly checking the engineer's explorations and estimates.

Such specifications as these hurt the engineering profession, municipalities and other owners, as well as contractors. All should join to educate the specification writers to a proper conception of what specifications are for.

* * *

Architects Win Plea for Distinctive Government Architecture

AN important victory has been won by the American Institute of Architects in its efforts to uphold the standard of architecture of government buildings, by the order of the Treasury Department that the new building for the Department of the Interior at Washington be faced with stone instead of brick, as originally contemplated. The change will entail an additional cost of $200,000 on a building for which nearly $2,500,000 had been appropriated. When completed the structure will occupy an entire city block. The Journal of the Institute of Architects has just issued a bulletin setting forth the facts in the matter. The bulletin quotes the following editorial from the Washington Evening Times anent the decision of the Treasury Department:

When the American Institute of Architects met in Washington a few weeks ago, they spent much time in discussing the future erection of government buildings. In the report of the committee on public buildings, the proposal to construct the new Interior Department structure of red brick was severely condemned. Every one interested in the development of the national capital applauded the report; then settled back, expecting the government to go right ahead and erect the building according to its plans.

Yesterday an announcement from the treasury department shows that the architects have won the day. The Treasury Department has ordered the building to be constructed with stone, though the substitution will cost Uncle Sam $200,000 more and may delay the work a few months. But no one will begrudge the $200,000 or the delay, since the present plans call for a building which will conform to the government architecture of the city, and which will not make a government building look cheaper than the newer office buildings.

The architects have performed a distinctive service for the capital, and the Treasury Department officials deserve just as much credit for listening to the men who, with disinterested enthusiasm, are trying to make the government architecture distinctive. It may not be too much to hope for that the change of plans marks a new era of co-operation between the supervising architect's office and public-spirited architects in private life who have a genuine interest in beautifying American cities, especially the national capital.

February Meeting of Los Angeles Chapter, A. I. A.

THE February meeting of the Southern California Chapter of the American Institute of Architects was held in the banquet room at the Bristol Cafe and was largely attended. The principal speakers were Dr. Chas. F. Lummis and Dr. Hector Alliot of the Southwest Museum. These gentlemen had been invited to meet with the Chapter and express their views on Architecture as it exists in this and other localities. Both speakers were in favor of opening the art galleries of the museum to the Chapter for a permanent exhibition room where the members could exhibit drawings, photographs and other works of art for the benefit of visitors.

The announcement of the death of Secretary Fernand Parmentier, which had occurred last August in the war zone of Europe, was read by the acting secretary and on motion a committee consisting of Messrs. Albert C. Martin, John T. Vawter and Albert R. Walker was appointed to draft suitable resolutions of condolence. A poem on the death of Mr. Parmentier was read by Mr. A. B. Benton.

Stiles O. Clements, who was recently elected to membership, and a number of prominent architects of the city, including Sumner P. Hunt, R. F. Train, Alexander Curlett, George Edwin Bergstrom and Silas R. Burns, were called upon for brief speeches.

* * *

A New Kind of Bid, "$500 Lower Than Low"

Former Governor Eberhart, secretary of the Widell Construction Co., Mankato, may attack an award of a contract at Iowa City to a bidder who bid "$500 lower than the lowest bidder," according to a report from that city.

It is certainly an interesting novelty, this bid of "$500 lower than the lowest," comments the Improvement Bulletin.

It looks like a cinch.

Information from the seat of conflict is that the Widell company's bid on a contract to build a bridge over the Iowa river there was $77,900; from $4,000 to $11,000 lower than that of any other contractor who named a specific amount. Wm. Horrabin, an Iowa City contractor, it is stated, bid "$500 lower than the lowest bidder," and was awarded the contract. Mr. Eberhart contends that the Iowa man's bid was irregular and null and void.

Another report says that the Iowa City Council decided the novelty bid was illegal but later accepted it.

If this ace-high, royal-flush, ne-plus-ultra, sine-qua-non, deadshot kind of bid goes, how great the burden off the contractors' backs. How simple, yet how nice to make bids: Just take a piece of paper and write on it:

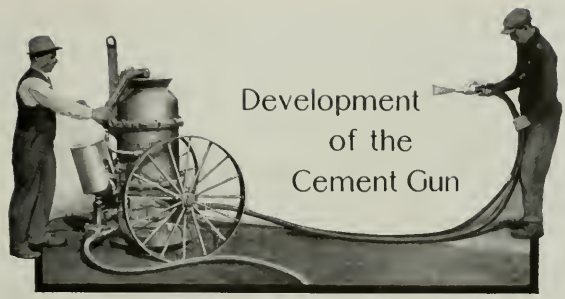
"$500 lower than the lowest." [No estimator needed.]

It's a grand idea (?) and the outcome will be watched with interest.

* * *

Los Angeles Architectural Exhibit

Los Angeles architects will conduct an exhibition on the sixth floor of the Metropolitan building, that city, from February 15th to March 4th. There will be about fifty architects exhibiting, together with displays by landscape architects, interior decorators, etc.



By C. H. CHALMERS*

THE cement gun is no longer an experiment. It has proved its practicability and its use is becoming more general as architects and engineers become familiar with its operation. The fact that the gun can be operated at less cost than the old hand method for large undertakings, such as damp-proofing, exterior stucco work and lining tunnels and retaining walls, has had a great deal to do with popularizing the machine. For those not familiar with the method of operation, the following brief description will be found interesting:

The cement gun consists essentially of a hopper into which the cement and sand, which have been mixed dry and screened, are placed; a hose connected to the bottom of the hopper, through which the dry mixture is forced by compressed air, and a specially constructed nozzle at the end of the hose, to which another hose, supplying water for hydrating the material, is attached. This cement and sand is "shot" into place with a velocity equivalent to a head of fifty pounds per square inch, or over 300 feet per second.

The instant water is added to cement, initial set begins and any further manipulation is bound to be harmful. With the gun a very small period elapses from the time the water is added until the mortar is in place. Contrast this with mortar mixed thirty minutes before using.

By leaving the nozzle at such high velocity the mortar is tamped into place so thoroughly that all air bubbles and excess water is driven out. This can be floated or brought to a finish at once. In order to apply mortar by hand it must be mixed with more water than is required for the hydration of the cement. When this excess water dries out it leaves a void. Moreover, floating or trowelling must wait until the water has gone, which also means that the cement has started to set. Or, as is done in running moulds, "drier" (pure cement or nearly so, used dry) is used to take up the water, so that the work may continue. This being so rich causes the surface to be covered with hair cracks.

When the stream from the nozzle is first projected against the wall, the very high velocity causes the sand to rebound. The cement, however, being plastic, adheres to the wall and builds up to a sufficient thickness to allow the sand to become imbedded. When specifications cover the point of bonding new concrete to old, they require a coat of neat cement

*With H. A. Chalmers, Inc.

REAR WALL OF HALE DEPARTMENT STORE, SAN FRANCISCO,
being waterproafed with the aid of the Cement Gun. Part of the west wall of this building was similarly treated several years ago and it was the only dry spot during the recent heavy rains.

ANOTHER PICTURE OF WATERPROOFING PROCESS UNDER WAY AT THE HALE DEPARTMENT STORE, SAN FRANCISCO
Reid Bros., Architects

between the two. Thus it appears that the gun automatically provides an ideal bond for all the mortar it applies.

An ideal mortar mix requires that each particle of sand be enveloped in a film of cement. The gun, as shown above, first applies neat cement, thick enough to imbed the sand grains. On this, in turn, a layer of cement is built up until it is thick enough to imbed a new layer of sand. At no time can this process be changed, because sand striking sand rebounds. It must not be supposed that these operations are distinct, as each layer is applied in a small fraction of a second. The whole process is rapid and continuous.

Authorities agree that the leaner the mixture, the less it contracts upon setting and the less it is affected by temperature changes. We can take advantage of this with the gun, because a 1:3½ mortar, gun applied, is stronger than a 1:2 mortar, applied by hand.

Westinghouse, Church, Kerr & Co., testing engineers, have found that the gun work is from 70 to 720 per cent better than hand-applied work, both as to strength (tensile—compressive and adhesive) and impermeability.

In general, the field for the gun is very wide. It has been used successfully in all of the following:

Waterproofing—Reservoirs, dams, sewers, basements, tunnels, irrigating canals.

Coating steel and wood for protection from rust, corrosion or fire — Bridges, roundhouses, pipe lines, office buildings, mine timbers, wooden piles.

New construction—Reinforced concrete warehouses, barns, silos, tanks, etc.

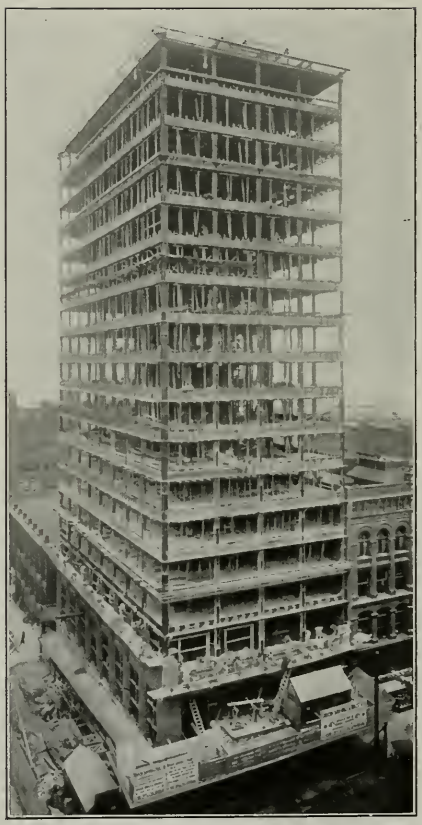
Plaster—Cementing old or new brick, tile concrete or lath.

Repair work — Patching disintegrating stone work, brick or concrete in foundations, sea walls, dams, etc.

More specifically, the gun has been used on the Panama canal to stop disintegration of rock; on the New York Central terminal in New York, to stop corrosion; on the Woolworth building, for fireproofing; on the sea wall at Lynn, Massachusetts, to repair disintegrating concrete; at Porto Rico, for protecting wooden piles; and at the Catskill aqueduct, for lining steel pipe. In this vicinity it has been used by the city for waterproofing tanks, cementing municipal car barns, waterproofing Twin Peaks reservoir division wall. The Lighthouse Inspector has used it for constructing water tanks. It has been used on a large number of waterproofing jobs, and also for exterior stucco. Senator Phelan's home at Saratoga and Mortimer Fleishhacker's home at Redwood City were both cemented with the cement gun.

The method used in applying stucco to frame buildings with the "gun" differs from the hand method. Light triangle mesh is stapled directly over paper to the sheeting, the staples projecting about one-half inch. The cement mortar striking the wall forces the metal out this half inch and completely surrounds it, in effect furring it out without furring strips. The gun applies the material only and the mortar is rodded and floated by hand. For this reason any finish obtainable by the hand method is obtainable with the cement gun.

Cost varies with the class of work, but in nearly all cases it will compare favorably with hand-applied work; and there are innumerable times when it is the only economical way of doing the work.



"THE ROMANCE OF CONSTRUCTION"
Showing steel skeleton in place, floor construction practically finished and exterior brick work started.

The Romance of Construction

By NOBLE FOSTER HOGGSON

BUILDING is the game of life. To realize the potency of the tremendous drama of construction, it is only necessary to journey around the corner (any corner nowadays), where the latest structure is in process of erection—and fall under its magic spell. Here are mighty forces at work. The sounds that greet the ear are as a great and stirring symphony to one whose heart and soul are properly attuned.

> Build thee more stately mansions, O my soul!
> As the swift seasons roll,
> Leave thy low vaulted past!
> Let each new temple, nobler than the last,
> Shut thee from heaven with a dome more vast,
> Till thou at length art free,
> Leaving thine outgrown shell by life's unresting sea.

So sang Oliver Wendell Holmes; lines significant spiritually—and yet how truly does the sentiment fit the skyscrapers that tower so majestically heavenward; the proud result of the skill, daring and imagination of man.

The art of building is seemingly no mystery; so many people think they know all about it. Yet it presents one of the most complex and intricate business problems of the age, and is being mollified of its terrors only through the development of systematic organization. The forces behind the forces—the dreamer, the creator, the planner, the executive, in various guises too numerous to mention—they are of the "persons of the play," no less than those who perform before the multitude, and do their turns in the public gaze.

In the rural districts, building is a simple matter. The farmer, with the aid of his son and the hired man, builds his house, and the repairs and alterations are taken care of in a like manner. In the village, this work is delegated. "Architect and Builder" is a sign that is commonly found, and it is learned that the humble village carpenter has appropriated unto himself a title.

Journeying on to the great centers of population, where life and business are more complex, the problem of construction becomes more involved. Massive piles that climb to the clouds—banks of solid masonry and steel—they are the voice of the city, and the products of the master builder.

The impelling interest of the skyscraper in the making! Crowds that gather in the morning to watch the daredevil rider of beams, rarely leave until the work of the day is done. Idlers, of course—dreamers, some of them—they are builders at heart, and their curious gaping is the result of some latent, inherent instinct.

They form the unofficial committee. Leaning over the protecting enclosure, they watch, with languid attention, the excavation. This is lazy work, but some interest is awakened in the next step, the laying of the foundations, calling into play the pneumatic caissons, concrete mixers, and sheet piling.

Then the steel begins to arrive—the first material on the job—foundation girders and heavy columns, weighing as much sometimes as seventy tons, loaded on a truck pulled by as many as twenty tugging teams of horses.

The unofficial committee is forced to adjourn to a new point of vantage and takes its position across the street. The foundation steel in place, the columns and floor beams are raised to the height of two stories. Then the great derrick is hoisted to lift the steel to a new height. Two more tiers, added to the network of steel, and other trades are ready to contribute to the making of the structure. As the skeleton rises higher and higher, lower sections of the building become a hive of industry.

Far above, the aviators of building flit about the giant spiderweb of steel. Like pygmies at play they appear, and they toss with unerring aim, and fearlessly catch, rivets that sear and scorch the air as they sail between them.

George Laws Cartlich caught the spirit of these workers and expressed it well in his "Rider of Beams":

He glories in the wind's mad strength,
As, dangling from a steel-rope's length,
It cuts his naked hands and face
And breast. He glories in the race
With danger, gloating o'er each escape
When one false move would break
His tremulous thread of life. The tap,
Tap, tap of rivets fills the gap
Of hideous noise of the whistle loud
In answer to his signal.
Cloud
After cloud reaches down to beckon him
To wilder rides above the din
Of steel and steam; he waves to them
In camaraderie, and then,
With sinews taut and nerves alert,
He swings around through smoke and dirt
To wrestle with the beams and chains.
A care
This rider of the upper air
Has not. He little recks of fear
Or aught except the joy of clear,
Keen danger, when the swinging beams
He's riding teeter; or the streams
Of p'destrians far beneath him flow,
A sheer four hundred feet below.

* * * *

The hero of the skeleton steel;
The master-cog in the master-wheel
Of progress; worker whose eye gleams
With the joy of living: Rider of Beams.

To the unofficial committee the romance seems to vanish with the passing of the iron-workers, but the carpenters and laborers, who build the scaffolds; the workers who hang the cornices; the plumbers and steamfitters who do the "roughing," and the masons and bricklayers—they are as daring and their prosaic tasks as heroic as the feats of the "roughnecks," the self-inflicted appellative of the iron-workers.

Exterior brick work has been begun at perhaps the fifth level and is climbing to the top of the structure. Three or four stories below the "bricks" are the plasterers, and further down are the marble workers and tile setters, followed by the trimmers and varnishers, who put on the finishing touches.

While these groups have been doing their work, another crowd of artisans has been installing the boilers, the pumps, the heating and ventilating ducts, the steam pipes and the plumbing pipes and the plumbing fixtures. The electricians, too, have laid their conduits and strung the wires, and the elevator constructors, who have run up their guides with the skeleton, are putting the machines in place.

A hive of industry hardly describes it. The excitement is intensely dramatic. As many as thirty component parts are under way at one and the same time and the master hand of organization that unites these elements and brings order out of seeming chaos is directed by a master mind indeed.

Men may come and men may go, but building goes on forever. Buildings, however, do not. They, too, have their span of life and pass out. Not long ago New York City's first skyscraper was razed, because it took up too much valuable land for its height. Because it was erroneously thought that the erection of this building marked a new era in the field of construction, there was much lamenting on the part of the sentimentally inclined, at its demolition. It was not, however, the first skyscraper erected in this country.

Even taller buildings, whose span of life should be long, have lived only to enjoy the adolescence of a dozen years, when the hand of progress, with economic conditions as its accomplice, has forced their removal to make way for still higher buildings. So will it be always; building and rebuilding will go on as long as time itself endures.

A COMMUNITY MAUSOLEUM, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

Architectural Terra Cotta the Gift of Earth and Fire

IN the vast long ago, while the earth was yet a molten mass, preparation for the manufacture of terra cotta was begun by Nature herself, in the formation of igneous rock. Unnumbered centuries of crumbling under the action of air, water, and sulphur fumes, reduced crags and ledges of granite to powder, resulting in the production of clay, a peculiar soil, barren and unbeautiful, but destined to be one of the two earliest elements in the civilization of man.

Man's most important discoveries were how to work clay and how to build a fire; and clay working would seem to have been the earlier of the two discoveries, inasmuch as his first rude possessions were sun-baked earthenware vessels. The addition of fire effected a partnership of earth and energy which brought forth a material well-nigh indestructible.

Of all the relics of antiquity which time has grudgingly spared us, only those of burned earth survive in the first freshness of their beauty. Through fire and frost, and centuries of burial in the depths of earth, the little blue scarabs of the Egyptians and the bright glazed tiles of the Persians, Babylonians and Chaldeans come to light as bright, as firm, as new, as when first taken from the kilns of the ancients. Likewise the urns, cornices, roof tiles, cresting, etc., of the Greeks remain to this day in a good state of preservation. In no other line of endeavor has man so nearly outwitted time and the elements.

In clay, man found a medium yielding to his every touch and reflecting his best ideals of beauty. From the days of the palace of Artaxerxes to the aspiring present of proud skyscrapers, all the genius and ingenuity of man has failed to produce a more beautiful or enduring building material than carefully prepared and properly burned terra cotta.

Through the dark ages the claims of clay were, in a measure, ignored for those of stone. While Italy has fine examples in the work of the Della Robbias and other Renaissance artisans, and Spain in the palaces of the exiled Moors; and while in Northern Germany terra cotta trimmings were used in numerous brick churches and public buildings,—the majority of building operations were carried on with other materials. In this country terra cotta was practically unknown fifty years ago, but the improvement and development of this material, through American enterprise, has been nothing short of marvelous. With the introduction of steel construction and the demand for absolutely fireproof buildings, it has come into such wide use that our modern metropolises might almost be called cities of terra cotta.

Every test of calamity has added to the laurels of terra cotta in the contest of practicability. From the San Francisco earthquake and the Baltimore fire, modern burned clay and steel construction emerged almost unharmed, while heated granite disintegrated under the spray of the hose, and gray-stone burned to lime as in a kiln. Terra cotta, in the burning, being subjected to a heat of about 2000 degrees, is proof against the breath of any further conflagration.

With the development of terra cotta architecturally, has come an enlargement of its aesthetic possibilities through the increased variety and beauty of designs and of colors and textures. Here is embellishment without extravagance, for ornamental features, which, in carved stone would represent years of skilled labor, can be executed in terra cotta in months or even weeks. By pressing many pieces from one plaster mold, designs can be duplicated at a relatively low cost, which permits the employment of the best talent in creating the original model.

Art finds the facile clay, as the Creator found it, most fitting of all mediums for the embodiment or spirit, its possibilities being limited only by the genius of the designer. Terra cotta introduces into architecture the ever-charming and enlivening element of color, while the matt glaze softens and harmonizes

all colors into effects never before achieved. Polychrome terra cotta is suited to exterior or interior adornment, used constructively or as decoration. Aside from these excursions into the realms of Faience, the solid surface colors for large areas are most varied and delightful. There are warm tones of gray and buff, reds, browns, mottled and spotted stone effects and the shimmering purity of bright white glaze,—clothing our skyscrapers with snowy cleanliness. Here we discover in terra cotta a virtue unique among building materials, for enameled terra cotta can be kept absolutely clean, simply through the use of water. The washing down of big white glazed buildings is a sight which never fails to attract the interest of crowds in the streets of the city.

Combined with so many advantages we should hardly expect economy; yet, through the use of terra cotta, a saving of time and money is effected, with a gain in beauty and strength. This material is set in place at comparatively low cost, being arranged in small units, which do not require special devices for hoisting,—all pieces having been assembled, accurately jointed and numbered in accordance with the working drawing, before leaving the factory.

For all of these reasons architectural terra cotta, used both structurally and decoratively, and expressing the architectural character of the edifice, has come to be the acknowledged building material of the present and can only increase in popularity with the unfolding of the future.

* * *

Thomas Jefferson, City Planner

THOMAS JEFFERSON was a many-sided man. Perhaps most of us think of him as having been a great lawyer, diplomat and statesman, as author of the Declaration of Independence, as Washington's Secretary of State and as the third President of the United States. Then, too, he was founder of the Democratic party. In the light of all these accomplishments and achievements he is blessed by all good Democrats and damned, either with or without faint praise, by all good Republicans. Some of his lesser achievements are but little less interesting than those which are recorded in our school histories. For example, it is probably not generally known that he had a very keen interest in city planning and that he had much to do with planning the city of Washington. Mr. William Howard Taft recently called attention to this side of the many-sided Jefferson.

How Washington selected the site for the proposed Capital City and how he engaged L'Enfant, an officer of engineers in the French army, to make a plan for the city of Washington, is a story familiar to all. Jefferson had much to do with the planning. Not only was he a very skilled architect, but he had a very lively curiosity and interest in the planning of cities.

Mr. Taft reminds us of the fact that Jefferson represented the United States as a diplomat in the negotiations with France and other European countries during and immediately after our war for independence. His duties naturally led him to visit many cities, and he got the plans of every city he visited. He studied these plans and, later on, turned them all over to L'Enfant. L'Enfant took these plans and upon them as a basis made what is really the present city plan of Washington. Washington is to become, in the development of this plan, the most beautiful city in the world.

These facts are recorded for the interest of our readers quite as much as to bolster up, if only slightly, the fame of Jefferson, who, because of being a small-navy man and the original Democrat, is not always spoken of with proper consideration in these days.

What Constitutes City Planning

THE Massachusetts State Homestead Commission, in its Bulletin No. 2, recently published, contains some straightforward statements about what City Planning is and how to go about it, and the following extracts from the report will be found interesting:

Great losses in life, health, time and efficiency result because enough forethought has not been given to the growth of the town. As a first step toward better living conditions in cities and towns the Homestead Commission recommended in 1913 that local planning boards be created in every city and town with a population of more than 10,000. This recommendation was enacted into law in 1913; thirty-six municipalities in the State have established such boards. The Act of 1914 gives permission to towns with a population of less than 10,000 to establish planning boards.

Through all the legislation affecting the Homestead Commission runs emphasis upon "increasing the supply of wholesome homes for the people."

The specific aim of city planning is to promote health, safety, convenience and beauty in the city, thereby conserving human energy and life. Such planning concerns itself with all the physical aspects of the city or town—its streets, railroads, waterways, public services; its administrative, educational and recreative property; and the development of private property. It treats them as component parts of an organic whole, so that each may dovetail into the next. The economies resulting from such planning will repay the cost many times over in items of immediate application alone; such, for example, as the narrowing of pavements on purely local streets to the width actually needed by the light traffic traversing them, thereby saving thousands of dollars in paving expense. Its ultimate value in directing the city's growth is inestimable.

As a basis for comprehensive plans, certain surveys are essential. The local board should secure at once as detailed knowledge of existing conditions as possible. It should have surveys of health and housing, serviceable topographic maps and other pertinent data. The general plans toward which the board should work should show all public and semi-public lands and easements needed now and in the next thirty to fifty years.

Although complete surveys and plans will usually require several years to prepare, there will be found certain features, differing in each city and town, which are capable of immediate accomplishment, and may be advantageously taken up in advance of the entire plan. General preliminary plans also will be of value to arouse interest in the nature and extent of the work. They should outline such prominent elements as the main system of thoroughfares, park areas, both existing and proposed, and the extension of the town and city into the surrounding country, over all land likely to be built upon within ten or twenty years. If better maps are not available for these preliminary studies the United States Geological Survey Topographic Sheet may be used, enlarged photographically to a scale of 1,000 feet to an inch.

Partial statistics of existing conditions may be collected very quickly, and will furnish a reasonably reliable basis for much of the preliminary planning. Statistics of population, health and housing are particularly relevant in determining the growth and welfare of the community. They should whenever possible be indicated graphically on diagrams or maps, in order to emphasize the conclusions to be drawn from their study. The topographic map at 1,000-feet scale may be used as a basis and for convenience designated as Map No. 1 of the preliminary survey.

On one copy of this topographic map may be plotted the distribution of various types of property—public, railroad, commercial, industrial and residential, the latter if possible separated into one-family, two-family and tenement houses (Map No. II). These data may often be compiled largely from existing maps. Plot the density of population in each block or other limited districts on another map, (Map No. III). If this is compared with maps showing the number of cases of communicable disease, especially tuberculosis (Map No. IV), and showing the infantile mortality rate (Map No. V), it will tend to prove whether there exists sufficient overcrowding of buildings on the land or of persons in houses to endanger health. A map showing the typhoid cases (Map No. VI), should be compared with a map showing the houses not connected with sewers (Map No. VII), thus tending to show whether there is necessity for such connections.

Another map may present the range of land values (Map No. VIII). This will give a more certain forecast of the direction of the community's growth than does the distribution of buildings. Such a map will also indicate the opportunities for purchasing land cheaply for such public purposes as parks, public buildings and street openings.

A brief tabulation of the city's financial conditions, including valuable, tax rate, revenues and debt, will supply in compact form the essential facts to be kept in mind. If these surveys are maintained from year to year they will form a reliable index of the success of civic improvement.

In the plan of a city or town the underlying framework is its means of communication—by water, rail and highway. First, the waterways must be laid down, as they are rather rigidly determined by the topography. Then the railroads, which to a great degree are also fixed, must be studies with reference to the needs of passengers and freight. Finally, the thoroughfares must be planned. This network of traffic streets, which will give access by foot, vehicle or electric car to every section of the city, is of greatest immediate importance, since it may be more readily controlled. Upon this network the scheme of improved housing, recreation facilities and other phases of the town plan will be built up. Without an adequate highway system the city's development will inevitably be cramped and only partially effective.

In any consideration of the streets of a city or town they should be sharply differentiated, according to their use, into main thoroughfares and minor streets, though there will of course be intermediate types. The principal highways should be made wide and direct, in order to accommodate heavy traffic so well that it will keep away from the minor streets. These highways should be fixed far in advance of building, in order to assure through connection. The resulting saving in land, construction and up-keep, due to the concentration of travel, will be very great, while the minor residence streets will be kept free from the noise and dust of heavy traffic and can be inexpensively paved.

In the preliminary studies a tentative scheme may be worked out on the topographic map, showing the existing thoroughfares radiating from the center and various sub-centers. Further studies may be made, roughly blocking out connecting links and extensions, traversing all land likely to be built upon; subject, of course, to modification as more detailed studies permit greater accuracy in determining their number and location. The laying out of the purely local streets within the large tracts thus defined may then be safely deferred until the property is to be subdivided. At that time plans may either be prepared by the local planning board or be submitted to it by the owners for approval.

Provision should also be made upon the plan for the administrative and other public and quasi-public buildings which are needed in any modern city, such as city hall, postoffice, schools, institutions and the like. The architectural treatment of individual buildings has recently been raised to a high standard in the United States, but the opportunity for greatly enhanced effort due to the grouping of several buildings is as yet seldom availed of, despite the numerous reports recently issued in various cities urging this principle.

The intense activity of city life, and the increasingly artificial conditions under which the citizens live, make more and more essential the introduction into daily life of recreation—the complete change and relaxation for tired nerves afforded by play and the appeal of nature. Such recreation facilities are for the most part to be provided by the park system, though school centers, public baths and other agencies contribute no small share to the opportunities for play.

In a city or town plan the ultimate concern is for the provision of homes and places of work—the residential and the commercial and industrial quarters—which should each be planned to fit its peculiar needs. A certain type of street plan is best adapted to factories, another to office buildings and a third to workingmen's homes; and each section will benefit by the economies due to this differentiation. Finally the improvement of the working places and homes themselves must be taken up, for they constitute the normal environment of most city dwellers.

Beside the concrete plans relating to definite areas, certain general principles of city planning should early be formulated. Street widths, their subdivision into roadway, parking and walks, and the type of pavement to be laid should be standardized for each class of highway, with sharp differentiation between main thoroughfares and minor streets. The most desirable lengths and depths of blocks and lots under varying conditions, whether alleys are a benefit or not, the best aspect for frontages, the value of building lines, preservation of streams flanked by streets for open storm drainage, the apportionment of a percentage of each new district for park purposes—these and many other problems of general application demand solution. In addition to the allocation of lands for exclusive public use, easements and restrictions on private property should be worked out, to conserve the best interests of the municipality. Certain of these will be found more or less effectively in force already. Every effort should be made to have the principles thus far deduced observed in all new plans, so that the mistakes of the past may not be repeated. In this way the growth of the city or town may be more and more directed so as to produce an orderly, healthful and attractive community.

* * *

Honor for Atelier Allison

Atelier Allison of Los Angeles came to the front in the December awards of the Society of Beaux Arts with headquarters at New York, securing a first mentioned place and a first mention in a competition in which 204 sets of drawings were submitted. The problem was a design for a free standing memorial tablet containing the names of sailors who lost their lives at Vera Cruz and placed at the side of an important parkway. A first mention place went to Gene Verge, draftsman in the office of A. C. Martin, and a first mention was given to M. E. Lavanaux, both students of Atelier Allison.

Changing Plans on the Contractor

IF a contractor makes a unit bid under certain conditions, and the owner's architect or engineer changes these conditions in such a way as to render that bid and the whole contract unprofitable, is that justice to the contractor? Strictly speaking, it is not. But is the contractor entitled at law to recover damages from the owner? Under certain circumstances, which are decided by a jury, he is not entitled to recover, and ought not to be, if we are to have any coherence in our legal system.

The questions are suggested by a recent decision in a suit which contractors for a reservoir at Seattle brought because the city's engineers changed grades on the work, necessitating extra excavation. The contractors claimed that their bid on excavation was unprofitable, and was made only in connection with a bid for refilling gullies at the reservoir site, which refilling had been eliminated by the change of grades.

A contract must be interpreted by the intent of the contracting parties as set forth in the contract instrument, of which, in the case of construction contracts, drawings and specifications form a part. If there is ambiguity in the instrument, testimony on the ambiguous point may be introduced as evidence of the original intent. In most cases—and the court indicates that this is one of them—it is not a matter of common understanding between the contractor and the owner's engineer which schedules in the contractor's unit bids are expected to prove profitable and which unprofitable. Obviously, it is not just to bind the owner to a feature of the contractor's bid with which the owner and his engineer were not acquainted at the signing of the contract, and which contractors generally have considered as no concern of the owners. As elsewhere in the contract in question right was given the owner's engineer to make those changes in the plans of which the contractor complained, the court could in common justice do nothing but dismiss his suit.

Such decisions mean in the end an economic loss to owners, however, for contractors are forced to make higher schedule bids, lest they be involved in loss through a change of plans by the owner's engineer. This is a strong argument for changing the present system of unit bidding and contracts made under that system. This may be done in two ways.

First, the czar-like power conferred in present contracts on the owner's engineer to change any feature of the plans and specifications after it has become part of a contract should be curtailed. In no other class of contracts known to law is such an advantage allowed to one contracting party without a corresponding concession to the other. The time when owners and engineers need to take unjust advantage of contractors to safeguard owners' money and engineers' reputations against mistakes of the latter is passing, and the legacy of these conditions incorporated in nearly all construction contracts should pass with it. This is said with full appreciation of the strength of clauses and contract forms which have withstood the shock of court proceedings and which should not lightly be tampered with. Common justice, however, is of more importance than hallowed contract forms.

In the second place, where full determination of a design, which it is desirable to make a part of the main contract, must await some preliminary construction work, the contractor should employ competent legal as well as competent estimating talent to guard against losses such as occurred at Seattle. In a case of this kind, the owner should be made a party to those schedule bids likely to be affected by a change in plans, and permission given the owner's engineer to change the contract only after a readjustment of such schedules satisfactory to both parties has been arranged. In other words, there should be incorporated in every contract liable to change a clause providing that the consent of both parties must be obtained before a change is made.

The law sometimes finds itself in the position of having to enforce one-sided contracts; but such contracts are offensive to the best legal minds. Doubtless many a judge has been disgusted with the awards required of him by ill-drawn construction contracts. Vesting power to change contracts in the engineer, on the ground that he is a third party, sounds very fine in theory, and is a quibble which the best courts in the land have discovered no way to challenge; but the practice is contrary to all principles of justice, since the interests of the engineer and owner in a change of contract are almost always identical. We venture to say that legal minds will rejoice with the contractors when this anomalous power vested in the engineer is stricken from construction contracts.—The Engineering Record.

* * *

How Stone Gets Stained

ARTICLES have lately appeared in various publications on the staining of stonework. Writers declared that the staining, in almost every instance, was due to the use of Portland cement and not to any defect in the stone itself. A writer in Stone declared that the discoloration could be avoided by setting the stone in approved lime mortar. He advised that architects provide drips of sufficient size to protect the stone from wash. The article has called out an interesting letter from J. H. Kerner-Greenwood of King's Lynn, England, who says:

An architect will go to no end of trouble in the designing of beautiful classical buildings, and yet forego throatings or drips under a projecting course. In many cases even a coping stone is omitted. The result is that it is almost impossible to walk down the main street in any town without seeing some building which has been disfigured by the rain and frost owing to such omissions.

I know many buildings which I have watched for some years since they were completed, and have noted the gradual disintegration of the joints of the top courses of stone or terra cotta, owing to the action of frost following rain.

The article states that the reason for this lack of protection from weather conditions is probably due to the interest in Classical and Renaissance architecture. That is undoubtedly one reason, but another reason is owing to the greater facilities for travelling which we possess today.

In the olden days, when the brothers Adam journeyed abroad to study architecture, making the grand tour, it was an event possible only to the rich architect who could afford both time and money. An architect brought up from the middle classes could not dream of making a trip to France, because the coaches and horse-drawn vehicles were too expensive. Nowadays, when it is so easy and so cheap for anyone to go to the South of France and to Italy, it is not to be wondered at that many have tried to introduce the domestic buildings which pertain to those countries.

Time is now beginning to tell upon some buildings which were erected only a few years ago. When it rains in those southern countries it pours down in one big sheet—a vertical downpour. The only protection such walls need is an overhanging eave.

With regard to Portland cement staining stone—a few years ago I gave a lecture at Carpenters' Hall upon waterproofing cement work. I was asked whether Pudlo would prevent such discoloration, and several people present said they would experiment to that end. If any reader of this letter has so experimented, I shall be glad if he would write to me, giving me the result.

I have, however, recommended that waterproof or hydrate lime should be used for this purpose. Hundreds of years ago nothing but lime was used, because Portland cement was not invented; and while I quite agree that Portland cement makes the strongest joint for many purposes, I do not see that it is necessary to lay the large blocks which are used in most ashlar work.

In many classical buildings the stones were fitted so well that no mortar was used between the stones. With waterproofed lime a perfect joint is obtained, and one which does not disintegrate from the climatic conditions.

* * *

New Method for Concrete Flooring

A RECENTLY patented system for reinforced concrete flooring was applied with success to a six-story apartment house erected in Paris. All the floors, as well as the roof terrace, were constructed on the new method of molding, which is the invention of Engineers Ferrand and Pradeau. A series of reinforced concrete beams running across the building in the usual way, serves as the basis for the flooring. A set of light planks is laid from beam to beam for scaffolding, and properly spaced at even distances. There are prepared hollow molds in plaster about eight feet long by five feet wide, and about the thickness of the flooring. Such molds have a somewhat elliptical curve at the top, with straight flat bottom and somewhat inwardly sloping sides. All the plaster molds are laid upon the planking end to end, and there is a certain space between the sides of the molds, that is where they rest upon the planking end to end, and there is a certain space between the sides of the molds, that is where they rest upon the plank; this latter of course running parallel to the molds. Then reinforcing iron rods are properly laid down, and concrete is molded on after the usual manner. The part of the concrete that lies between the plaster molds thus forms a series of vertical webs, limited at the bottom by the wood planks, and as the concrete is put on to several inches above the tops of the plaster molds, it has a flat surface all over the floor. The plaster molds remain in place and are part of the flooring, being buried in the concrete, except on the under surface, and aid in consolidating the floor, for such molds themselves are braced in their hollow cavity by two vertical webs in the middle, the walls and webs of such molds being a few inches thick. Combined with the concrete, this makes up a solid floor, and what is of great advantage is that there is now given an under surface (formed for the main part by the flat bottom of the plaster molds), which is ready to receive the ceiling plaster, without the use of lath or any other preparation. After the cement has set, the wood planking is withdrawn from underneath, for according to the reinforced concrete construction, the flooring is made to rest eventually on the main stringers of the house, the under boarding being only to uphold the work during the molding of the concrete. Because of the air space in the plaster forms, there is given an air cushion which makes such floors sound-proof, this being another good point, and it is also to be noticed that the hollow plaster part makes a series of natural conduits for electric wires, piping, and the like.—Scientific American.

* * *

Lacked Inspection

"Blinks says that when he was young he was the architect of his own fortune."

"Didn't they have any building inspectors in those days?"

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OF CALIFORNIA

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PLACING THE BLAME FOR POOR CONCRETE WORK

We hear a great deal about poor concrete construction due to incompetent handling. Just as frequently we hear the architect criticized for awarding a contract to an irresponsible cement man. Now, as a matter of fact, the real culprits, if culprits they may be, are neither the architect nor the engineer, but most frequently the corporation that sells the material, knowing, at the time, that it is bargaining with a weakling. If the manufacturer should decline to sell his product to this fellow unless he submitted satisfactory proof of his good standing financially and professionally, there would be very small chance for a failure. It would be up to the architect or owner to reaward the contract to a responsible bidder. The trouble heretofore has been that the manufacturers—both of cement and the machinery with which it is mixed—in their mad rush to corral the business, have been encouraging everyone who desired to go into business for himself to enter the concrete game. The general public seems to be firmly convinced that anyone who can drive a nail through a board can build a concrete form, and that anyone who can turn a shovelful of grout can make concrete. To illustrate:

Comes now John Smith, out of a job, or looking for new fields. He sees an advertisement for a block-machine, we'll say, which looks attractive. His order is promptly mailed and machine received. He borrows his neighbor's vacant barn for use as a shop, buys three or four sacks of cement from the lumber yard and has a load of sand sent up. Within a day he is making concrete blocks and has some letterheads struck off, giving his name as "general concrete contractor"—that always "listens" good. Meanwhile, Brown, the other concrete man in the town, is figuring with Jones on the erection of a concrete block house; Smith hears of the job and goes after it. Naturally, he has no reputation to help him land the work (and none to sustain, either), so he plans his advantage from the low-cost standpoint; he bids two or three cents lower per block in order to get the first job and

"show what he can do." Within a short time he is known as "Cheap John," is kept busy repairing his jobs, replacing poor material, and dodging his creditors. Finally his shop is closed, or Brown, whose business he has greatly injured, magnanimously buys him out.

This is not imaginary. Pity is, it's true. Not one concern alone is to blame, nor one man.

In a certain concrete journal, September issue, there appeared a long article, illustrated, showing $20,000 worth of concrete culverts and bridges in the state of Iowa, which will have to be entirely rebuilt by their erectors because it wasn't "concrete for permanence."

We know of a certain county in Illinois where bids were recently opened for construction of a 12-foot-span bridge. The engineer's estimate was $1,140. Bidders were eleven in number. Bids ranged from a maximum of $1,350 down to $350. No amount of clean, square get-together could have changed that situation. The plain fact is that at least half the men bidding knew absolutely nothing about their own business.

How many manufacturers of cement and machinery take these facts into account? How many survey the field and, on finding that there are already too many engaged in the same line of business in their community, advise the prospective purchaser to that effect? How many, on the other hand, are merely after the order, caring nothing about the future of the industry?

CITY PLANNING AND THE ARCHITECT

The indefatigable labors of our city planning workers seem at last to be bearing fruit. Hopeful signs are everywhere seen of an awakening of our cities to the fact that as great commercial or even manufacturing centers they need not necessarily be ugly. Municipal societies are bending every effort toward beautifying the existing cities and toward the sane planning of additions and growths thereto, and few cities are there now where some club, or board of trade, or other body of representative citizens has not made a comprehensive plan for a civic center, the widening of certain streets, the creation or reclamation of certain parks and boulevards. In some cities huge sums have already been expended in the work of building up to such a plan. It is a good investment. Our railroads appreciate that and are no longer stingy in providing beautiful stations and surrounding them with parking, handsome approaches, fountains and what not.

The city governments themselves realize that doing things properly, paying some attention to the esthetic as well as the more essentially practical end of municipal work and "improvements" is sound policy and meets with the favor of the people.

Strange as it may seem, the real obstructionists in this movement are the architects. It is a bit paradoxical, too, for the movement was seconded, if not started, by them; they preach it loudest; you'll find them in the van, probably chairmen and presidents of those very societies or clubs that are making the greatest headway. And, worst of all, they don't seem to know or realize that they are such arch-offenders. And it all springs from an overdose of the ego. Each architect wants to do something individual, characteristic; he cannot and will not merge himself into and for the benefit of the whole, the common good.

Of what use is it to plant beautiful, wide streets, keeping all the wires underground, prohibiting unseemly signs, and all that sort of thing, if the buildings lining those streets are at daggers' points to each other? A city is, after all, but an aggregation of buildings; without them there is no city; and whatever its plan, however gorgeous its parks and noble its streets, its buildings are its foremost feature, and it is beautiful or ugly exactly as are its buildings. Taken individually, many of our latest buildings in every city are beautiful, as isolated units they

are well designed, but not the slightest effort has been made to blend them into the surroundings, no consideration has been given the city, the ensemble. True, most of our cities are suffering from an inheritance of appalling freaks and "impossible" buildings, bequeathed from former generations; nevertheless, the suggestion of a Denver editor is pertinent, that "every architect should be placed under bonds to keep the peace between buildings." That so many of our existing structures are monstrosities should be but an added incentive—the task being that much harder—to our architects to so build all about them as to minimize rather than accentuate their ugliness; to adopt tones and colors in the newer buildings that will at least not scream at each other or the old ones, and to so plan the new, generally much taller buildings, too, that they may divert attention from the old without challenging unfavorable criticism themselves.

Special City Hall Number

The April issue of The Architect and Engineer will be a special "City Hall Number," with more than forty full-page plates of San Francisco's $3,000,000 municipal building. This number will also mark the tenth anniversary of the San Francisco fire.

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Praise for New City Hall

"The majestic pile which dominates the San Francisco Civic Center is, beyond the slightest question of a doubt, the finest city hall building in the world," declares Professor John C. Branner, formerly president of Leland Stanford Jr. University, in a letter recently received by Mayor Rolph.

"Its spirited facade is far more commanding than the Hotel de Ville at Paris," he writes. "Even such notable examples as the City Hall at Tours and Compiegne or the very interesting town halls of Belgium and Germany, are so inferior in size as to be hardly comparable. In its composition the San Francisco City Hall is eminently more successful than the Invalides, St. Paul's or St. Peter's. It is with such renowned structures as these that the new City Hall may be more fairly classified."

Professor Branner suggests in his letter to the Mayor that a tablet to commemorate the architects, Bakewell & Browne, who designed the new City Hall, should be placed either within or without the building, and he mentions several instances of architects of great structures being thus remembered.

Modesto Grammar School

Messrs. DeRemer & Hewitt, Title Insurance building, Los Angeles, have been selected as architects for the new grammar school building to be erected at Modesto in Stanislaus county. Preliminary sketches and estimates will be prepared at once preparatory to voting bonds for the building, which will cost about $60,000. The building will be one story, modified Mission design, and will contain six class rooms and an auditorium to seat 500.

Predicts New Type of California Architecture

"A Renaissance in architecture is due in Los Angeles and San Francisco. I believe that the San Francisco Exposition, which was a gem of architecture and a vision of beauty, has marked a new era in the development of architecture in California and that you are on the threshold of a distinctive architecture such as many of you have been hoping to see developed here. Your Renaissance is coming.

"Mission architecture! As I traveled through your State, I wondered whether the builders of the original missions would have built 'Mission' buildings in the manner in which I have seen so many structures designed."

This was a comment of C. H. Blackall, architect of Boston, where he is one of the leaders of his profession. Mr. Blackall recently spent several weeks in California inspecting the State insane asylums preparatory to designing a new institution for the State of Massachusetts, for which he has been given the commission.

Prescott Court House Competition

Twenty-three sets of competitive plans for the new county court house to be erected at Prescott, Arizona, were received by the board of supervisors. The plans submitted by Norman R. Coulter of San Francisco, F. J. De Longchamps of Reno, Nevada, and Architect Bowman of Denver, Colorado, were selected as the best three and these architects will submit more complete drawings in the final competition. The plans will be considered by the board of supervisors on February 24. The new court house will be classic in design and will cost about $250,000.

Why Not Beautify Our Hotel Courts?

(From the California Hotel Reporter.)

A question which has probably never occupied the minds of hotel men, hotel architects and hotel builders to any appreciable extent recently smote the editor right between the eyes. Why are hotel courts so cold and bare—so utterly devoid of ornamentation, while the walls of the rooms and corridors are invariably tinted in soothing tones, hand painted, papered or overlaid with wood panel—or upholstered?

In the case of the interior decorating, as with the facade of the building, the object very evidently is to please the eye of the guest.

Now then, many of these guests must, of necessity, occupy court rooms. Why should they be condemned to gaze upon the bleak, barren walls of the court, upon which no attempt has been made toward architectural or colorful beauty?

Is it because the courts are not made conspicuous in the architects' drawings, and therefore are not reproduced in the trade press or the daily papers? Or is it that the popular impression of these courts is still along the lines of the old "light shafts" that had to be whitewashed every spring in order that any daylight at all would find its way into some of the "inside rooms"?

It would be interesting to try the experiment of using the same facing material on the court walls as is used on the street side of the building—and to pay as much attention to the architectural detail of the court walls as is paid to those that face the thoroughfares.

The man who pays for his room is entitled to at least as much consideration as the man who walks or rides by.

Echo of the Sacramento Library Competition

Here is an interesting bit of gossip anent the recent Carnegie library competition at Sacramento. After the jury had finished its labors and the prize winner had been announced from a list of over fifty competitors, it was discovered that one plan had been completely overlooked. It seems the drawing was executed on heavy paper, which had been fastened to another drawing to serve as a background. Not until the plans were being returned to their respective owners was the discovery made, and then it was deemed too late to change the judgment of the jury.

The architect whose drawing failed to receive judgment has placed the matter in the hands of his attorney and the outcome will be awaited with interest. It has been suggested that an impartial jury might be named to decide between the plan submitted by the winner of the competition and the plan that was inadvertently mislaid.

Personal

A. Burnside Sturges has removed his office to room 1128 Story Building, Los Angeles.

Leonard A. Cooke, formerly of Pasadena, is now a lieutenant in the British army, having enlisted in the Royal Lancashires, a pioneer corps in defense construction.

A. E. Sedgwick of Los Angeles and Ray Alderson of San Diego have been granted certificates by the Southern District of the State Board of Architecture for the practice of their profession.

Architect C. H. Blackall of the firm of Blackall, Clapp & Whittimore, prominent Boston architects, was a guest at the annual dinner of the Engineers and Architects Association, Los Angeles.

A. F. Rosenheim, formerly vice-president of the Los Angeles Municipal Art Commission, has been elected president of the reorganized board. Mrs. Sumner P. Hunt, wife of the architect, was elected vice-president and F. W. Blanchard re-elected secretary.

T. W. Ransom, for eight years consulting engineer to the San Francisco Board of Public Works, has resigned and has established offices for the practice of his profession as mechanical engineer. Mr. Ransom had much to do with the construction of the high-pressure water system for fire protection and the construction of the San Francisco municipal railway system.

Certificates Granted

At a meeting of the California State Board of Architecture, Northern District, held on December 28, 1915, the following were granted certificates to practice architecture in this State:

Clarence A. Tantau, 519 California street, San Francisco.

Hugh C. White, 353 Fourteenth avenue, San Francisco.

J. C. Westervelt, formerly of 34 W. Thirty-fourth street, New York City.

Engineers and Architects

At the annual dinner of the Engineers and Architects Association of Los Angeles officers were elected and twelve new members were admitted. The new president of the association is A. H. Koebig; first vice-president, Arthur S. Bent; second vice-president, Ira J. Francis, and directors, J. J. Packard, George P. Robinson, H. R. Smith and A. C. Martin.

$250,000 Court House

Plans are being completed by William H. Weeks, 75 Post street, San Francisco, for a $250,000 Court House to be erected at Woodland for Yolo county. Construction will be steel, terra cotta and granite, with interior of marble and hardwood. Plans will go out for figures shortly.

Competition Will Be Held for California State Building

The California State Board of Control recently held a conference with State Architect Geo. B. McDougall for the purpose of determining upon the preliminary steps for calling for plans and drawings for the State building to be erected in San Francisco at a cost of $1,000,000 and for the Capitol Extension buildings at Sacramento, to cost $3,000,000.

This has been done at the direction of Governor Hiram W. Johnson, who has ordered that there shall be no loss of time now that the bonds are sold before actual construction begins.

Under the law the State may call for competitive bids for architectural designs, and architects of the whole country may compete. The plan for the competitions, the prizes and other details are now being worked out and the program will be announced shortly.

Chas. Peter Weeks Busy

Besides the Alameda County Infirmary, the Lange & Bergstrom apartment house, and the Bollman factory, all of which are under construction, Chas. Peter Weeks, the San Francisco architect, is preparing plans for a Class "A" ice-skating rink to be erected at Eighth and Market streets for D. J. Granman and associates at a cost of $200,000. Mr. Weeks has also made preliminary sketches for an eight-story Class "A" bank and office building to be erected on the property of the defunct Safe Deposit Company at Montgomery and California streets, San Francisco. Plans have also been prepared by Mr. Weeks for the reconstruction of the house of Mr. F. W. Bradley, Broadway, near Devisadero street, San Francisco. The improvements will cost approximately $35,000.

Six-Story Apartments

Louis M. Gardner of San Francisco has prepared plans and has taken bids for a six-story steel frame Class "C" apartment house to be erected at Ellis and Hyde streets, San Francisco, at a cost of close to $100,000. The D. & W. Investment Company are the owners. Mr. Gardner also has plans for a one-story store building for the Lange Investment Company.

Architect Hobart in Washington

Lewis P. Hobart and his engineer, Mr. Ronneberg, recently spent some time in Washington, D. C., on matters pertaining to the new $1,000,000 postoffice building to be erected in Portland, Ore., from plans by the San Francisco architect.

Competition for Long Beach Schools.

The Board of Education of Long Beach has completed the compilation of the requirements for the new intermediate school buildings to be erected in that city and architects desiring to submit preliminary plans and estimates may receive the necessary data from Superintendent of Schools W. L. Stephens. The board favors the restriction of the competition to certificated architects. Two buildings are to be erected, each to accommodate about one thousand pupils. The buildings will cost in the neighborhood of $125,000 each.

Another Motion Picture Theater

Still another large motion picture theater is to be erected in San Francisco. Messrs. Cunningham & Politeo, who have designed quite a number of creditable theaters in the bay cities, have prepared plans for a Class "A" store building and motion picture theater to be erected on the west side of Mason street near Turk, for the Joseph McDonough Estate. The new amusement house will cost in the neighborhood of $70,000.

Architects Have Much Work

Messrs. Edwards & Norberg, architects of Burlingame, Cal., have plans for no less than three large concrete buildings to be erected in that city. One of these is for Attorney Kirkbride of San Mateo and another is a Class "C" theater and store building for George W. Gates of Burlingame. The same architects also have a number of attractive residence jobs, including a bungalow for John McBain, the San Mateo County Supervisor.

Rousseau & Rousseau Busy

Messrs. Rousseau & Rousseau, the San Francisco architects, have quite a little new work under way, including a three-story and basement frame apartment house on Sacramento street, west of Pine, for Robert Dewar; a six-story steel frame brick apartment house for Theo. and Clara Rolfs at Sutter and Jones streets; and a three-story Class "C" store and hotel at Seventh and Howard streets, all in San Francisco.

Large Dairy Depot

The Associated Milk Producers Company, recently organized with a capital of $100,000, plans to erect a large brick and concrete depot in the vicinity of Third and Townsend streets, San Francisco.

$15,000 Country House

Water H. Ratcliff, Jr., of Berkeley is preparing plans for a $15,000 country house to be erected near Mt. Diablo for Mr. R. N. Burgess.

San Jose Architects

Frank D. Wolfe of San Jose has quite a little work under way. He is making plans for a bungalow apartment house to be erected at Second and Williams streets, also alterating the D. C. Lombarde house into apartments, and remodelling the White House.

Andrew P. Hill, Jr., has made plans for a small apartment house and garage.

Theodore Lenzen has made plans for remodelling the old building of G. Wendt & Sons, and Chas. McKenzie has plans on the board for several attractive residences.

Christian Science Church

Elmer Grey of Los Angeles, who has designed a number of churches in Southern California, has been commissioned to prepare plans for a $15,000 Christian Science church at Palo Alto.

OBITUARY

Fernand Parmentier, F. A. I. A.

Mr. Fernand Parmentier, secretary of the Southern California Chapter of the American Institute of Architects, died at Seddul Bahr in the Dardanelles on August 7, 1915. The news of his passing was not received in Southern California until the latter part of January. It brought sadness to many hearts in Los Angeles and caused them to more keenly realize the tragedy of the great war in Europe. When the European war broke out Mr. Parmentier, though not physically robust, answered the call of his country and enlisted as a volunteer in the French army.

Mr. Parmentier was born in Paris forty-eight years ago, the son of a French officer who fought through the Franco-Prussian war. His mother was an Alsatian.

Mr. Parmentier journeyed to Southern California in 1890, entering the service of a Santa Barbara architect as draughtsman. He moved to Los Angeles in 1894, working in local offices for three years and then going into business for himself. During the years of his practice he planned many notable buildings, including business blocks, apartment houses, hotels and fine residences. The last building he designed was the $100,000 Murray apartments in the Westlake District.

For thirteen years before he went abroad Mr. Parmentier actively served the Southern California Chapter of the American Institute as its secretary. The news of Mr. Parmentier's election as a Fellow of the Institute reached him in the trenches in Alsace.

No details have been received as to how the Los Angeles architect came to his death.

Alexander Forbes Oakey

The death of Mr. Alexander F. Oakey, architect, occurred in a San Francisco hospital the latter part of January.

Mr. Oakey was well known to the older men of the profession. He came to California from New York with the late A. Page Brown and had lived in San Francisco ever since.

Mr. Oakey had a very thorough training in architecture and his many brilliant natural gifts led him into various lines of work, more or less related to architecture, such as acoustics, stained glass, wall paper and landscape gardening. In earlier days he worked in the offices of such men as R. M. Hunt of New York and Norman Shaw of London.

At one time he was in partnership with his brother-in-law, Mr. Sullivan Jones, later of the firm of Palmer, Hornbostel & Jones of New York City.

Mr. Oakey's career as an architect was varied and picturesque and included such interesting commissions as the restoration of the Villa Mattei near Rome and the construction of a mansion in Santiago, Chile.

Mr. Oakey upheld the finest traditions of his profession with a dignity and a distinction in striking contrast to the rough and ready methods so generally prevalent heretofore in the West.

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Special Articles this Month by Fred G. Dustin, Geo. A. Schneider, J. E. Van Hoosear and Edwin W. Moore.

Next month—"Indirect Lighting" "Electricity in the Office Building."

Electricity in the Home.

By FRED G. DUSTIN, Minneapolis

WITHIN the present generation a remarkable evolution in artificial lighting has taken place. The writer well remembers, as a child, how his grandmother manufactured her own tallow candles by the two processes of using dips and moulds.

To attempt an extended account of the various forms of illuminants which have been employed in man's attempts to imitate the light of the sun would require a long discussion and is outside the purpose of this article.

A brief summary, however, is necessary in order to better appreciate the present refinement.

It may be assumed that savage man first kindled his bonfire from some natural agent such as an active volcano or burning gas well. Later he discovered that the grease dripping from his cooked meat would readily burn, and that a bit of rush or other combustible absorbent would emit a fair light if kept partially submerged in such a bath of animal fat.

Candles, made first from animal fats, and later from vegetable wax, were a natural result, and, as inventive intelligence in man developed, more improved forms of lamps succeeded them.

A great advance was made when burning fluids were introduced, incorporating the use of cotton wicks and improved burners. The use of kerosene lamps was a most important step in modern lighting, and was probably the first illuminant bright enough to require the use of shades for the eyes.

The invention and use of artificial gas was a logical result of the recognition of the fundamentals of natural gas, and the developments in the last few years along this line have been very satisfactory.

It was early appreciated that a light with a minimum of accompanying heat would be a very desirable agent to employ. Inefficiency and fire losses were very noticeable with the flame types of illuminants, and man has studiously endeavored to imitate the fire fly, in the production of its cold light.

With the discovery and production of current electricity, an early attempt was made to obtain artificial light from this source; and we have just observed the thirty-sixth anniversary of the advent of Edison's first incandescent carbon lamp. This light, within a glass bottle, compared with open flame lamps using explosive gases and liquids, certainly seems as safe an illuminant as can be employed.

For economical reasons, light without heat is greatly desired, since, as the light itself is the result of heat, every particle of heat not expended in the actual light is a direct loss. These losses have been gradually cut down through various improvements until today, with the so-called Mazda and Nitrogen lamps, the amount of electrical energy for a given quantity of light is ridiculously small.

This fact, together with the great reduction in the price of electricity, places the electric light easily within the reach of the most humble citizen.

On a candlepower basis, electric light costs about one-twentieth the price of lighting with candles; and for the price of one ordinary parlor match, used in lighting the candles, one can obtain the use of a four-candlepower light for ten minutes. This is cheaper than most people realize.

Outside the cheapness and safety of electric lights, the supreme convenience of control must appeal to everyone. A touch of the button floods the room with light; inaccessible lights are readily operated from one or several remote points; dark closets, basements and attics are as properly illuminated as any other parts of the premises.

With the advent of electric current in the home for lighting purposes, other important uses have been rapidly developed and the small electric motor has been put to a hundred uses.

The use of vacuum cleaners first introduced in office buildings, theaters, etc., is now general in the home. Here an electric motor is employed to drive a fan at a high rate of speed whereby a partial vacuum is formed. Nozzles are provided and so arranged that the suction of the vacuum formed has a powerful lifting action on the surface applied, and particles of sand, lint, dust and all bits of loose materials are quickly removed from the substance and transferred to a suitable receptacle, leaving the rug or other fabric clean, and the air free from dust. The use of this device

has done much toward prevention of disease and of the spread of contagion. The sweeper type is more commonly employed in the home, and these are obtainable at very moderate prices.

What an advance in civilization has been made from the primitive method of washing out clothing at the side of the brook by beating the goods on flat rocks, to the present modern household laundry equipment. Now the clothing is placed within the receptacle of an electric washer, together with a bath of soapy water, and the small electric motor operates the vacuum cups of the machine thoroughly removing every stain in a few minutes. Likewise, the wringing, that bugbear of "Blue Monday," is performed by the same motor. A turn of a lever operates the wringer rolls in either direction, and all superfluous moisture is effectively removed. The cost of current for operating such a device is about one cent per hour.

Other motors of even smaller size are employed to operate the ice-cream freezer, mix the dough for bread and cake, beat eggs, chop food of various kinds, and, even in my lady's boudoir, through the agency of the electric vibrator, to gently massage away the wrinkles of ripening years.

Used therapeutically, these massage machines have most important functions in the treatment of many forms of muscular and nervous complaints, stimulating circulation and assisting nature to perfect a cure.

The electric hair drier is a combination of a motor-driven fan and an electrically operated air warmer, whereby one can be assured of safely drying the hair on a dark, cold winter evening as well as in bright, sunshiny weather.

The dangerous hot water bag has been superseded by the valuable therapeutic agent, the electric heating pad. These can be employed for the application of dry heat, or, by the use of a waterproof covering, are equally serviceable for hot compresses; and as the amount of heat is adjustable, one is enabled to obtain any temperature effect desired. Moreover, an automatic device operates to prevent an excessive generation of heat.

Electric irons, coffee percolators, chafing dishes and toasters are now so well known as to require but passing mention. It suffices to say that each of these appliances does its work in a cleanly, sanitary and economical manner, with a minimum of labor, and without wasting energy in heating the atmosphere.

It is interesting to note that special wiring is not necessary, though desirable, to operate any of the devices above mentioned, as they may be readily attached to any lighting socket in place of the lamp.

In keeping up with the world's progress in civilization and refinement of living, the art of lighting man's abode has made remarkable advances. It is a long cry from the dim bonfire in the cave man's den to the modern electrical lighting equipment in the houses of present society.

There has been a slow but steadily evolutionary development in artificial lighting until today we have not only an abundance of light, but, moreover, a light that is economical in use, beautiful to behold and correct for color values.

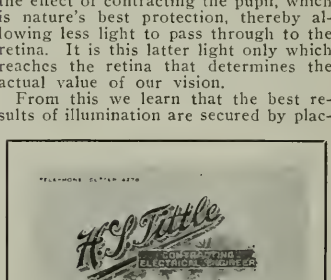
For all time, of course, sun light will remain the standard of perfection, as it is free to all, as it has practically a constant color value and as it is the best possible light for the eyes.

Constant and correct color value is desirable in order that dress fabrics, house furnishing, paintings and even the human skin may always appear the same under various conditions of lighting. But most important is the physiological effect that light has upon the organs of sight.

Sun light coming strongest from above and diffused by refraction and reflection, strikes the eye at such an angle that it can do the least mischief to that delicate organ; since nature has afforded it protection by the overhanging brow, eye lashes and thick upper lid. Strong light reaching the eye from below is very injurious, as the lower lid is much more transparent and the other natural protections are deficient under this condition. This is forcibly illustrated in the case of snow blindness, where a strong glare of light is reflected upward into the eyes.

Bright lights placed within the line of vision materially lessen the perceptive power of the eye. Notwithstanding the fact that the object looked at may be more brightly illuminated, the effect of the bright light shining in the eye has the effect of contracting the pupil, which is nature's best protection, thereby allowing less light to pass through to the retina. It is this latter light only which reaches the retina that determines the actual value of our vision.

From this we learn that the best results of illumination are secured by plac-



ing the initial sources of light well above the line of vision and diffusing the light by means of suitable shades. This well understood fact has resulted in the design of various types of lighting fixtures where the lamps are placed rather high or properly protected with suitable shades.

There are today three distinct types of lighting fixtures; namely, the direct, the indirect and the semi-indirect. With the direct type where the light falls directly on the object to be illuminated the source of light must be placed high in the room such as is done in the case of the so-called shower fixtures. Here the lamps, in the case of the ordinary living room, should be placed at least eight feet above the floor and controlled by means of wall switches. The indirect type allows none of the primary light to fall directly but is all thrown upward upon the ceiling itself or a suitable reflecting surface and re-reflected downward. The semi-indirect type is arranged to throw a part of the light upward and a part downward through translucent bowls or shades. Each has its particular merits and the type best suited for the purpose should be selected for each case. It is obvious that electricity lends itself better than other agents of illumination for these various types of lighting fixtures, as heat, smoke and noxious fumes are all eliminated.

To enjoy the privileges mentioned above, it is, of course, necessary that the home be wired for electricity. It is perhaps unfortunate that so many homes have been built in our city where this desirable feature has been omitted. It is unfortunate only that it has deprived the owner or occupant the great benefits of the use of electricity and no new house, large or small, broadly speaking, is now being constructed without this necessary and valuable feature.

The fact, however, that the home was not wired when constructed need deter no one from using electricity, as it is readily possible to wire any finished building, concealing all wiring in the walls and floors. To be sure it is an art to do this work neatly, but the skilled mechanic using proper materials is able to do this work without, in the least, damaging the house or its decorations.

The master electrician determines the requirements of the owner, secures from the lighting company the point of entrance of the service wires from its lines, makes up his schedule and list of materials. This is then placed in the hands of a skilled wireman, who, with his helper, proceeds to carry out the instructions through his special knowledge of his business and building construction.

The service wires are installed to meet the requirements of the lighting company and the branch circuits are arranged to provide for the special conditions of the wiring schedule of lights. It is often a source of wonder and admiration how the competent wireman succeeds in doing his work in finished houses. A bit of baseboard or attic floor carefully removed gives him access to his outlets and switches and by means of his "fish-tape" he can reach points which might have appeared inaccessible to the layman.

Hardwood floors are left intact, and the wires are fished up and down in hollow spaces between walls and between floors and ceilings, sometimes taking advantage of his knowledge of building construction to utilize odd corners and runways for his "fishing" operations.

These fished wires are all covered, not only with their rubber coating, but, in addition, with a flexible, insulating tubing which thoroughly protects the wires from contact with each other and other conducting materials. In fact, this class of work is particularly satisfactory, as it is installed after all other mechanics have finished the placing of their materials and no opportunity exists for disturbing the electric wiring.

In spite of the fact that high grade materials and skilled mechanics be employed, the cost of wiring a home is ridiculously small, being only one or two per cent of the cost of the entire building, less, in fact, than almost any other part of its construction or finish.

The time has passed when electricity in the home might have been properly termed a luxury, as it is now within reach of all and is recognized a real necessity to our modern life.

Worth Double the Money

Some people seem to think that the circulation of The Architect and Engineer is confined to architects, engineers and the building trade. They are mistaken. This magazine is read quite as extensively by owners of buildings, capitalists, bankers and insurance people, as indicated by the following letter, one of many similar epistles received by the publishers:

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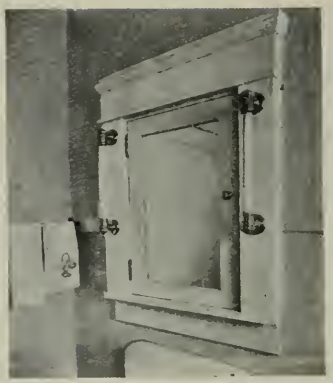

Photograph of the tubular lamps installed in angle pull sockets. One end of the lamp is held by a socket shell only. Regular pull socket can be either at the top or bottom, as desired.

Bathroom Lighting

THE requirements of bathroom lighting are important but not complex. The main object is usually to provide satisfactory illumination for shaving, combing the hair, etc., before the mirror with a fair intensity throughout the room. Even with the fine reflecting qualities of walls and furnishings, a centrally located ceiling outlet or a single wall bracket at one side of the mirror hardly provides suitable freedom from shadows for shaving.

The accompanying illustrations from the Lighting Journal explain a new and very practical method of bathroom lighting. Two frosted lamps are placed on each side of the mirror, the latter being the outside of the door to the medicine chest, placed just above the washstand.

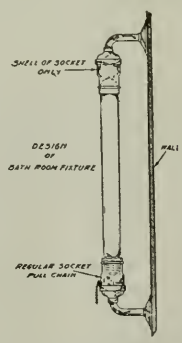

Diagram of bathroom fixture, giving details of construction.

The results are pleasing. When not lighted the fixtures are inconspicuous, the frosted lamps having much the appearance of short white glass towel bars in a vertical position. One lamp will light the usual bathroom for all ordinary purposes, the distribution from the frosted lamp combined with the white interior of the room producing very uniform illumination.

Some Things I Would Do Were I an Architect

By GEORGE A. SCHNEIDER

MOST of us have a habit of telling anybody and everybody what we would do if we were king, and sometimes some of us bring forth points that the king could use. Now, for instance, I'm an electrical engineer, but if I were an architect, well—

In the first place I would put a stop to useless stair climbing in any house I planned. The solution is simple—interphones. These little step and energy savers could be designated in my plans and the wires run at the same time the other wiring is installed. By planning their installation with the house I could find for them the most advantageous position, which would obviate the marring of walls accompanying an installation made after the completion of the house.

I would banish the broom from any and every house I planned. The solution is the stationary vacuum cleaner. It is possible to place one of these efficient cleaning agencies in a corner of the basement and from it run pipes to every floor. By designating this system in my plans, the pipes could be installed while the house was building, thus entailing small installation cost. With this system I would arrange outlets on every floor at which the operator could attach a hose and cleaning tool and by means of a handy switch start and stop the motor in the basement.

I would arrange my illumination so that there would be a pure white indirect light in every room. This eliminates all shadows and saves oculist bills.

I'd plan for an electric kitchen with current taps designated for an electric range and electric utensils. The dining room would be planned so that outlets would be near the dining and serving tables, to which the attachment plugs of the various electrical devices, ever present in the modern home, could be attached.

I'd arrange for an electrical laundry. An electric washing machine, drier and ironing machine would be accommodated with handy outlets and spare current taps would take care of any additional equipment.

Every room would have a neat, unobtrusive outlet to which an electric fan, an absolute summer necessity, could be easily attached. Finally, I'd arrange to have a spare outlet in every room to take care of eventualities.

Thus would I provide for a home electrical in the plans of every house I designed. Even though the facilities would not be taken advantage of, they could be installed at very little cost and would be ready when the occasion arose.

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The Uses of Electricity in Construction*

By J. E. VAN HOOSEAR

THE service to which electricity can be applied in the construction of buildings, both small and large, and of any material, is increasing and will be found indispensable when the builders fully appreciate the worth of the electric motor-driven devices that are now placed at their disposal. It is the aim of the writer at this time to bring out the uses to which electricity is being applied through the motor and otherwise in building construction work, to the profit of anyone connected with the erection of buildings.

Work that can be done by means of electricity is limited only by the desires of the individual, and can be applied from the first operation of clearing a lot to the last operation of polishing the floors.

Starting with the pioneer work of clearing a heavily wooded site that is frequently encountered, a motor-driven wood saw is set up to work into cord wood any timber that may be standing on the premises; next electricity is used to explode powder in removing stumps or rocks from the site; the excavation is accomplished by means of a motor-driven excavator which deposits the dirt into trucks that haul it to the dumps and in return deliver the rock, sand and cement that is used in the construction of foundation and walls. In a great number of places where the excavation is deep, large quantities of water accumulate, and it is necessary that this water should be removed in order to proceed with the foundation work; this is easily accomplished by means of a motor-driven pump, which needs very little attention, as it can be equipped with an automatic float switch, which will keep the water out night and day. From this stage on, a motor-driven saw will be found very serviceable to do all the rough sawing necessary in the construction of the concrete forms and the building frame.

The concrete used for foundation walls, floors and walks is mixed in a motor-driven mixer, and hoisted to different levels for distribution by means of a motor-driven lift supplied with a special dumping bucket. The bricks and other materials are also hoisted to the several floors by means of electric hoists, thereby saving time and adding to the efficiency.

Some little data have been gathered in connection with concrete work in regard to the quantity of power required in mixing and other work directly connected with it. In a reinforced concrete loft building of three stories, 3,000 yards of material were used. A one-yard mixer driven by means of a 15 h.p. motor handled the material, a saw driven by a 5 h.p. motor cut all the lumber used in making the forms; these two motors consumed a total of 2,000 kilowatt hours, or about 1.5 yards per kilowatt hour. In a steel structure concrete building of eighteen stories, using 1,782 yards of material, 829 kilowatt hours of electric current were used, showing a consumption of 1 kilowatt hour for each 2.15 yards mixed. The last named job was done by a contractor who owned several gas engine driven mixers, which he had been using for a number of years. He set one of them up to do this work, and after running a couple of days it developed troubles, causing delay and expense.

An electric motor was then secured to complete the work, which it did in the usual satisfactory manner. Now he, like many others who have taken the interest to look into the merits of electric-driven machines, will have no other mode of operation.

The plumber has not been left behind, and if the job is large he will have motor-driven pipe and thread cutting machines on it to help him with his work.

If the outside walls are to be plastered, this can be speedily accomplished by means of a motor-driven compressed air plastering machine, which will lay on a coat of cement plaster to any thickness desired. If the building is of steel structure, the beams can be hoisted and placed by means of an electric-driven hoist. In connection with the placing of steel, it has been the opinion of a large majority of those directly interested in this work that the operation can only be accomplished with satisfaction by means of the steam donkey engine; precedent, like a rut in a road, is one of the easiest things to follow and one of the most difficult to get away from, and I presume is the solution for this. Upon a close study of the matter it is found that the reason for this contention is they either own engine-driven hoists or have tried to do their work with improvised electric-driven apparatus which was found unsuited to the task, and being dissatisfied with results, would not listen to anyone regarding the up-to-date motor-driven appliances that have speed and control equal to the best of engine-driven hoists; it would be well for anyone who is contemplating getting new equipment to investigate the merits of the electric hoist.

After erecting the steel, the rivets that hold it together are driven home and headed by means of hammers operated with compressed air which is supplied by a motor-driven compressor.

The plaster which finishes the walls is mixed with motor-driven machinery that has been found to give a more thorough mix than was obtained by the old method.

*Paper read before the Builders' Congress, San Francisco.

In marble work, motor power is found necessary from start to finish, even to the chiseling and drilling that is necessary in the process of setting it in place.

In fine interior hardwood finish, the electric glue pot is found indispensable and is not a fire hazard.

A unique use has been found for electricity by one of our local builders, in the placing of an electric sign on a large building he was erecting, thereby availing himself of a modern way of advertising night and day the class of building erected, and in an up-to-date manner.

In the polishing of a great number of large floors of ball rooms, halls, etc., portable scraping and sanding machines have been built, and are operated by motors that form a part of the apparatus. No other mode of drive would serve the purpose, because of the necessity of cleanliness, which could not be obtained if coal or gas were used for the purpose of motive power.

What may be of interest to this body is a unique method of mixing and delivering concrete, differing considerably from the old way, and can be used to advantage in cases where very heavy walls are to be built, or in places where the forms cannot be reached from above, and is accomplished by means of compressed air. There are two quite distinct patented ways of doing it. The first requires the usual motor-driven mixer, which in turn deposits the mix of about 20 cubic feet into the upper end of a cylinder shaped tank 4 feet in diameter and 8 feet long, cone shaped at the lower end and connected with an 8-inch pipe line that delivers the charge to the forms that may be located a considerable distance away, in some cases as far as 2,000 feet. The charge is driven from the receiver by means of compressed air under 100 pounds pressure to the square inch at a rate of one charge per minute where the distance is around 300 feet, or about three minutes where the distance is 1,500 feet, and requires a 200 h.p. motor to drive a 1,200-foot air compressor delivering at 125 pounds pressure per square inch. The other method uses a smaller tank with 5-inch delivery pipe; the charge of about 10 cubic feet of sand, rock, cement and water is delivered direct into the tank, no mixing machine being used. The cover is then closed and the compressed air turned into the tank and forces the charge up to the desired location. In passing through the pipe line the material becomes thoroughly mixed. Both of these machines have been used on large tunnel jobs in San Francisco with satisfactory results in cost of delivery of material and quality of work.

Increasing Demand for Electric Wires a Test of Our Prosperity

By MR. EDWIN W. MOORE, President of the Electric Cable Company

THERE are thirty-seven manufacturers of insulated wire in America; and their output, despite their equipment and twenty-four hour operation, cannot equal the demand for this important electrical product.

The gross income in the past year of the electrical industry and service must have totaled more than two and one-half billion dollars. This includes central stations, electric railways, telegraph and telephone service, electrical manufacturing and the like.

This will give you some idea of the vast sum which is tied up in electrical interests in this country. The income from the lighting industry alone last year was three hundred and sixty million dollars. Electric railways, which are knitting the country more closely together than ever, had receipts of seven hundred million dollars. The telegraph and telephone service brought in three hundred and fifty million dollars.

Our interest as makers of insulated wire lies in the fact that every watt of electric current sooner or later passes through an electrical conductor. The electric locomotive in the mine, the motor in the factory, the electric heating iron, or your electric light—all reach

Prometheus, the Food and Plate Warmer Electric, of course

"Resource" — How convenient at the moment of delay to be able to conserve those qualities of the meal or luncheon which make for their success. Recourse to the Prometheus Food and Plate Warmer has helped many a hostess maintain her poise and good nature when belated guests "keep things waiting" or unlooked-for-friends drop in. It's a necessary "part of the house." Let us tell you why.

M. E. HAMMOND, Pacific Coast Representative
217 Humboldt Bank Building, San Francisco.

The Prometheus Electric Company

to the source of power generation through insulated wire.

Naturally, we have kept in touch with conditions throughout the country and we have found that the demand for electricity, and, of course, for wire, has proved a most accurate measure of the country's recent commercial expansion. There can be no important developments of building operations without a large demand for insulated wire.

There are two phases in which we are interested—the industrial demand for electricity and the demand in the home. The latter is just as much a measure of prosperity as the former. When times are good the housewife is in a receptive mood for the purchase of electrical devices, as short cuts to a number of house operations. When times are not so good common sense in the matter may be overruled by an illogical fear of extravagance and she may go back to costly antiquated methods of toasting bread, ironing, etc. The present is pronouncedly a period of great activity in the sale of electrical household devices. Insulated wire, of course, is required.

To put it in a nutshell, the better the times the greater the amount of electricity used; the more electricity the more wiring. The manufacturers of wire in this country have doubled their output in six months—on orders coming from within the country, not from without.

This has a deeper significance than the gain to the industry itself. The demand for electricity is a sign of progress. While we may look upon conditions across the sea as an unfortunate misuse of science, let us not forget that the triumphs of our electrical engineers and chemists are steps forward, by which every part of the community benefits, so that we can regard the output of the insulated wire industry as an actual contribution to the country's welfare.

How the Exposition Architects "Discovered" D'Arcy Ryan

Introducing the Exposition's Lighting Wizard, W. D'Arcy Ryan, at a recent dinner in his honor, Willis Polk told how the Architectural Commission happened to "discover" Mr. Ryan. Said Mr. Polk:

Mr. Chairman and Gentlemen:

Four years ago Mr. W. D'Arcy Ryan came to me and said: "Mr. Polk, I am going to illuminate your Exposition." I was surprised, but I listened.

He gave me an earful.

He filled me with misgivings.

He engendered in my heart, the heart of a simple man, great resentment.

Why, said I to myself, should a mere lighting man speak, even to an humble architect like me?

He was insistent. I was cold; I was skeptical. He said he came to me because I was chairman of the Board of Architects. I was delighted. I said to myself, I will fix this fellow. I will call a meeting of the Board.

The Board kicked; the Board said that they had not sought advice; they knew what they wanted, and when they wanted it they would ask for it.

But I said: "Let's hear him and that will end him."

So I called a meeting for 11 a. m. on the understanding that Mr. Ryan would receive half an hour's consideration.

He came promptly at 11 a. m. No one left that meeting until 3:30 p. m.

The first one to leave was D'Arcy Ryan, and when he left he took with him the goat of every member of the Architectural Commission.

From the sacred fire that burnt at the sacrificial pyre of the ancient heathen to the candles that continuously illuminate the altars of Christendom; from the break of dawn to the present light, never was the art of illumination subject to the mastery of man.

From the very beginning of time; from the creation of the sun and the moon; by torch and flame; by flint and steel; by wick and lamp; by oil and by juice man has ever tried to solve this problem.

From the savage torch; from the flaming tripod lighted to ancient gods, to the candle, the lamp and the deadly gas; yea, even unto the wizard's later dream—electricity—has mankind striven to emulate the sun, the moon and the stars.

Now comes Walter D'Arcy Ryan and he "done it."

As Thomas A. Edison said, I now defer to *"that man Ryan."*

Improved Lighting for the Big Cities

Illumination of Market street, San Francisco, as original and distinctive as that at the Panama-Pacific Exposition, is promised. The plan is being worked out by Walter D'Arcy Ryan, the Exposition illumination expert.

The project calls for the most modern type of "blue-white" arc lights, mounted on the present poles. Three lamps are to be used along the street and five at the principal corners. This arrangement, Ryan declares, will bring out the facades and skyline of the buildings distinctly, and will also add to the effectiveness of the lighted street signs and show windows.

Ryan has worked out a scheme for lighting Salt Lake City similar to the one proposed for San Francisco. His plans have been adopted by the Utah metropolis, and will be carried out within the next few months.

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at all times by installing the TUEC Vacuum Cleaner. Safeguard the health of the occupants from the impurities contained in the dust and dirt bound to accumulate.

The TUEC is known to be one of the best air purifiers, since it not only keeps an interior clean, but it prevents the accumulation of all unhealthful germs, removing all dirt from the cracks and corners of a room. The dirt is conveyed to a machine in the basement where it can be disposed of.

THE TUEC

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is designed and constructed on the UNIT plan. This feature alone makes it simple, durable and economical in operation.

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Consulting Engineer

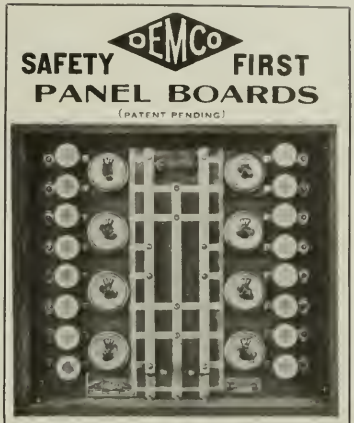
CHARLES T. PHILLIPS, consulting engineer, San Francisco, has been engaged in consulting engineering, electrical, illuminating and mechanical, on the Pacific Coast for about twelve years.

While Mr. Phillips enjoys a large clientele among numerous business firms, industrial plants, corporations and municipalities, he is best known in his work by a large number of prominent architects.

The first examples of scientific illumination on the Pacific Coast are attributed to Mr. Phillips, and he has been either the electrical or mechanical engineer, or both, in connection with a large number of buildings, among which are the D. N. & E. Walter & Company's store, Kohler & Chase, the Cort, Alcazar, Majestic, Wigwam, Clunie, Pantages, Cory and Lyric theaters, St. Ignatius church, St. Joseph's orphan asylum, Knights of Columbus hall, two Y. M. I. buildings, Central M. E. church, Stanford Memorial Chapel, Oakland hotel, Portland postoffice, Willows postoffice, Seattle cathedral, Lowman building, Seattle, Children's hospital, San Francisco, flats, apartment houses, warehouses, office buildings, etc.

Mr. Phillips has been a contributor to the columns of The Architect and Engineer for the last four years and has also written for the technical press throughout the country.

The current issue contains an interesting article by Mr. Phillips.



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Review of Recent Books

of Interest to the

Architectural and Engineering Professions

By CHARLES HENRY CHENEY

REPORT ON A CITY PLAN FOR THE MUNICIPALITIES OF OAKLAND AND BERKELEY. By Werner Hegemann.

A splendid piece of work and of unusual interest to both architects and engineers is this comprehensive and well-presented volume. Claiming to be more of an economist than a designer, Doctor Hegemann gives a most sensible, straight-forward analysis of these fast-growing communities. He makes us see clearly the harbor, the railroads for freight and passenger distribution, and the streets as the backbone of the city. Parks, playgrounds, civic art, civic centers are visualized with 195 well-chosen illustrations of great interest.

Percy V. Long, president of the California Conference on City Planning, writes of it:

"Dr. Werner Hegemann's City Planning Report on Oakland and Berkeley is a most remarkable analysis of city building in California, and its comparisons of present haphazard conditions with what careful planning has produced in the progressive and thoughtful cities of the world will be invaluable to all interested in civic affairs. There are so many apt comparative photographic illustrations, diagrams and drawings that it is impossible for any person of ordinary intelligence to keep from being interested. The wording is not technical and the enormous number of facts presented make us see these cities not only as they are but with some constructive and forceful idea of what they reasonably may be with careful city planning."

Published by the Berkeley City Club, 301 California Hall, Berkeley. Illus., 160 pages. In boards, cameo paper, $1.57 postpaid; paper, $0.81 postpaid.

REJERIA OF THE SPANISH RENAISSANCE. By Arthur Byne and Mildred Stapley.

This is the day of grilled balconies and doorways and there is so little published showing any of the really best iron work of Europe that this book will be both welcome and useful to architects. In twenty-six full-page plates the authors seem to have selected and shown the finest of the Spanish Renaissance wrought-iron grills. The effective massing of rich ornamental band courses in contrast with simple screens of twisted bars attained in Spanish work of that period a success never since equalled in any other country. With California's Spanish history and traditions these motives will be both appropriate and useful here. The illustrations in this volume give detail drawings, sections and photographs in large and clear form. It should be most useful, therefore, in the draughting room.

Published by the Hispanic Society of America, New York. Cloth, 13x17 inches, 103 pages; illus. $5.00 net.

ARCHITECTURE OF COLONIAL AMERICA. By Harold Donaldson Eberlein.

Harold Donaldson Eberlein, whose "Practical Book of Period Furniture" was issued a couple of years ago, has followed his first venture with a handsomely illustrated volume entitled "The Architecture of Colonial America," a handbook full of interest not only for the professional architect, but for the lay reader as well. Eberlein achieves his dual purpose by following out the proved theory that the architecture of a people visibly embodies the social life and history of that people.

The author explains why he has not used "American Colonial Architecture" for his title on the ground that of the two types of architecture used during that period in this country only one is truly colonial, in that it was evolved from local conditions, and the other (Georgian) was bodily transplanted from England. Of the truly colonial style there are several varieties—the Dutch houses of New York, the "seven-gable" type of New England, the pre-Georgian type of the Middle Colonies and the colonial houses of the South (antedating the classic type which we associate with the old plantation life).

A chapter on colonial church architecture is of great interest, and another on early American architects records such names as James Portius, Andrew Hamilton, Joseph Brown of Providence and Charles Bulfinch, designer of the original State House, of which the Massachusetts building at our Exposition was a replica. (Boston: Little, Brown & Co.; price $2.50 net.)

THE PITTSBURGH DISTRICT—CIVIC CONDITIONS. Edited by Paul U. Kellogg.

For those seeing in city planning the elemental problem of bettering living conditions, this thorough piece of investigation will be most significant and valuable. The study of social problems undoubtedly must form a large third of any city planning analysis. The elemental obstacles of progress—the lack of understanding of civic workers and civic forces, the lack of sanitation, the housing of a city's workers, the disproportion of taxation, clogged and retarded schools, stinted playgrounds—are here given in such a true picture as must needs set every reader surely to thinking of what can be done about it. The experiences of scores of cities are here focused into one and here also may be seen the hope and beginnings of a solution for our own civic problems.

Published by the Survey Associates, New York, 1914. $2.70 postpaid.

A TREATISE ON HAND LETTERING FOR ENGINEERS, ARCHITECTS, ETC. By W. J. Lineham.

This volume by Professor Lineham, head of the engineering department of Goldsmith's College, University of London, treats the subject of lettering from the standpoint of both the student and the practical draftsman and engineer. The introduction contains many valuable suggestions as to instruments, methods, and technique, and the plates comprise a very varied collection of alphabets suited to almost every conceivable need of the engineer, draftsman or student. Its usefulness to the architect might have been increased by the introduction of a few noted historic examples of inscriptions on stone and the like.

"A Treatise on Hand Lettering for Engineers, Architects, etc.," by Wilfrid J. Lineham, B.Sc., M. I. C. E., etc. New York: E. P. Dutton & Co.; $3.50 net.

OTHER BOOKS RECEIVED

THEATERS—THEIR SAFETY FROM FIRE AND PANIC, THEIR COMFORT AND HEALTHFULNESS. By William Paul Gerhard, C. E.

Published by the Baker & Taylor Company, New York. 102 pages. $1.00 net. Review later.

PRINCIPLES AND PRACTICE OF PLUMBING. By J. J. Cosgrove.

Published by Standard Sanitary Mfg. Co., Pittsburg, Pa. Illus., 506 pages. $2.00. Review later.

MINERALS OF CALIFORNIA—BULLETIN NO. 67. By Arthur D. Eakle, Ph. D.

Published by the California State Mining Bureau, Ferry Building, San Francisco. 219 pages.

COLONIAL ARCHITECTURE FOR THOSE ABOUT TO BUILD. By Herbert C. Wise and H. Ferdinand Beidleman.

Published by J. C. Lippincott Company, Philadelphia, Pa. Illus., 269 pages. $2.00. Review later.

PROCEEDINGS OF THE SEVENTH NATIONAL CONFERENCE ON CITY PLANNING.

Published by the University Press, Cambridge, Mass. Illus., 302 pages. $2.00. Review later.

THE BUILDING OF IT. By Walter J. Keith.

Published by Walter J. Keith, architect, 11 W. Thirty-second street, New York. Illus., 156 pages. Price $1.00. Review later.

THE COMMERCIAL PROBLEM IN BUILDINGS. By Cecil C. Evers.

Published by the Record and Guide Company, New York. Illus., 274 pages. Review later.

CITY PLANNING—WITH SPECIAL REFERENCE TO THE PLANNING OF STREETS AND LOTS. By Charles Mulford Robinson.

Published by G. P. Putnam's Sons. New York. Illus., 344 pages. Price $2.50. Review later.

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Industrial and Other Notes

San Francisco Steel Factories Are Busy

San Francisco steel industries have been enjoying unprecedented activity for this time of the year, which is generally quite dull.

The Ralston Iron Works has the structural steel contract for the Union Iron Works addition, also the jail fixture work for the new Sacramento Hall of Justice and the two-story addition to the Standard Oil building.

The Golden Gate Iron Works has several important school jobs.

The Western Iron Works is working on the Cogswell school, San Francisco, and the Moffitt Theater, Oakland.

Dyer Bros. are busy on county bridge work at Nacimiento, Bradley and San Lucas, also a 1200-ton double-leaf trunnion bascule bridge for the city of Seattle and the steel frame for both new wings of the San Francisco City and County Hospital.

The Pacific Rolling Mills has the B. I. Wheeler Hall, Berkeley, University of California library and the harbor warehouse No. 1 for Los Angeles county. The Vulcan Iron Works will fabricate the steel for the new theater at Ellis and Mason streets, Mathew O'Brien, architect.

Bass-Hueter Paint Specifications

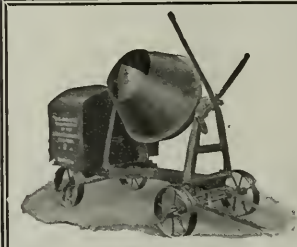
Specifications for the assistance of architects have recently been prepared and printed by the Bass-Hueter Paint Company. The specifications cover every branch of the painting industry, including shingles, exterior wood, galvanized iron and all metal work, cement, brick or stone, interior painting, enameling and tinting.

The instructions are clear and concise and in such language that even the layman can follow them with ease and confidence.

It is surely a step in the right direction when the manufacturer, in addition to producing the finest product possible, goes still further and insures the right treatment of his goods by clearly written specifications, carefully thought out and easily understood.

Many a product of sound quality has had only poor success for no other reason than that of ignorance of the best method of handling it.

The Bass-Hueter Paint Company evidently has remedied this drawback and proposes, by educating the user, to get the most out of its fine line of paints and varnishes.



THE BIG-AN-LITTLE CONCRETE and MORTAR MIXER

Big Output—Little Weight
Big Profits—Little Cost
Capacity 35 Cu. Yds. a Day

All rounded surfaces—no corners for concrete to lodge in.
Revolves on ball thrust bearing, hermetically sealed to prevent grit from working in.
Equipped with levers for turning over and locking device to hold drum in place while mixing.

EDWARD R. BACON COMPANY
Pacific Coast Agents
51-53 Minna St., San Francisco Tel. Sutter 1675

"Falling Behind"

THAT'S what happened to a San Francisco house last year and this house is a branch of a big Eastern concern that believes in "National Advertising." In 1915 it contracted for space in the National Weeklies and Monthlies in six figures. The same year this firm spent practically nothing for advertising in Pacific Coast publications. Its San Francisco manager is quoted as saying that its local business fell off 40 per cent.

It is a fact that where the magazine of so-called national circulation reaches one buyer on the Pacific Coast the strictly coast publication reaches from ten to twenty. Is it any wonder, therefore, that this house has been "falling behind"?

Quality and Price

It is impossible to satisfy quality at any time. But by a large production and economic manufacture many economies can be effected.

The Pacific Combination A-24 is the most generally used closet of the pattern illustrated.

For this reason we are able to offer it at lower prices than a closet of its quality and design usually commands.

Like all the Pacific line, A-24 is absolutely guaranteed for an unlimited number of years.

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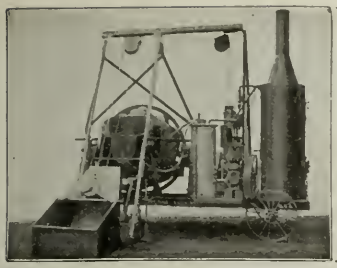

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Made in all sizes and styles of mountings for general concrete work, for road and pavement construction, and for bituminous concrete work.

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Haws' New Catalog

The Haws Sanitary Drinking Faucet Company, Inc., of 1808 Harmon street, Berkeley, has just issued a booklet of thirty-two pages covering its product. Illustrations of the various types and attachments clearly show the principle of this eliminator of the old style common drinking cup.

Models of fountains range from the individual single tube with ball attachment to those having water receptor and waste. Others can be attached directly to the pipe standard. Then there is the model specially designed for railway car water tanks. The more elaborate have vitreous china receptor and nickel plated fittings. The various types cover a wide range. The ready acceptance by the university authorities, school boards, etc., is evidence of the need of the Haws sanitary drinking fountain.

A New Product of Distinctive Merit

Kahn portable steel buildings are completely illustrated and described in a new catalog just published by the Trussed Concrete Steel Company. The whole idea of these portable buildings has been developed along new and original lines. They are substantial structures of exceptional quality, not to be compared with the ordinary flimsy, light gauge materials that have often been sold for portable buildings.

The field of usefulness of Kahn portable steel buildings is practically unlimited, covering the range from the smallest garage to large general shops for manufacturing purposes, and including contractors' houses, hospital buildings, school houses, factory buildings of all types, summer cottages, boat houses, election booths, etc. The catalog will be sent to interested parties if they will address the Trussed Concrete Steel Company, Youngstown, Ohio.

Brick Company Publishes New Price List

The Los Angeles Pressed Brick Company has just published (pocket size) a valuable booklet containing complete price list of the various products manufactured by the company, including vitrified salt-glazed sewer pipe, fire clay flue lining, fire clay chimney pipe, radial interlocking brick and clay products in all lines. The book is profusely illustrated.

Exposition Number Wanted

The publishers will pay 50 cents for one copy of the Exposition number of The Architect and Engineer, No. 3, Vol. 39.

INSLEY MFG. CO.

Insley Method Concrete Distribution Excavating Machinery.

Marsh-Capron Mfg. Co.

M-C Rail Track Concrete Mixers

Three Sizes of Paving Mixers.

Mead-Morrison Mfg. Co.

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Recognized Advertising Mediums

Early in January the American Rolling Mill Company sent out the following announcement advising the public where to look for the company's January and February advertisements:

Armco Iron advertisements will appear during January and February in the following publications:

General Magazines

Saturday Evening Post—January 15th and February 19th.
Literary Digest—February (Building Number).
Scientific American—January 8th and February 26th.
World's Work—February Number.
Review of Reviews—February Number.
Outlook—January 26th and February 23rd.
McClure's Magazine—February Number.
National Geographic—February Number.

Farm Papers

Breeder's Gazette—February 3rd.
Country Gentleman—February 12th.
Farmer's Advocate and Home Magazine—February 20th.
The Farmer—February 26th.
Farmer's Guide—February 5th.
Farm Journal—February Number.
Kimball's Dairy Farmer—February 15th.
Rural New Yorker—February 19th.
Western Farm Life—February 15th.

Technical Magazines

Railway Age Gazette—January 7th and 21st; February 4th and 18th.
Hardware and Metal—January 8th and 22nd; February 5th and 19th.
Iron Age—January 6th and 20th; February 3rd and 17th.
Iron Trade Review—January 6th and 20th; February 3rd and 17th.
Architect and Engineer of California—January and February Numbers.
American Architect—January 5th and 19th; February 2nd and 16th.
Electric Journal—January and February Numbers.
Indian and Eastern Engineer—January and February Numbers.
Far Eastern Review—January and February Numbers.
Building—January and February Numbers.

Fireproof Buildings

"The Finishing Touch in Fireproofing Your Building," is the name of a new booklet just issued by the Dahlstrom Metallic Door Company, whose hollow metal doors and window trim are well known throughout the United States. Architects and owners will find this book of exceptional interest and value and a copy will be mailed free on application to the Jamestown, N. Y., office.

The following paragraphs are a sample of the information to be gleaned from the book:

The Dahlstrom Products have been thoroughly tested for their fireproof qualities by the National Board of Fire Underwriters, by the British Fire Prevention Committee of London, by ourselves and in a number of severe actual tests after installation. Conclusive evidence may be had for the asking.

The Dahlstrom Products convert every office, compartment, floor or unit into virtually a separate and distinct building. Whenever the contents of any unit have burned themselves out the fire has not spread, for the patented Dahlstrom door is sufficiently strong to confine the fire to the fireproof unit in which it originates.

Suppose you are erecting a ten-story hotel. Though you took advantage of ordinary precautions to make the structure fireproof, if you use wooden doors, sash and other trim, you have not precluded the possibility of a fire quickly spreading to every room throughout the hotel. Because of the very fireproof materials used in the other parts of its construction they convert the building into a furnace or oven and thereby intensify the flames when once started. That hotel would be insured. The principle of insurance is good. It will always be in force. But would you have so much need for insurance were you to absolutely eliminate the fire hazard? Is it not better to minimize the possibilty of fire, to isolate the small blaze when it does occur, than to carry larger insurance and stop your fireproofing efforts when they have only been carried half way?

There are now numerous buildings equipped throughout with the Dahlstrom Products. The Bankers Trust Building in New York City is perhaps no better than other absolutely fireproof structures in reality. We refer to it only because of its being perhaps better known. A dozen fires might occur in as many separate offices simultaneously. The occupants of the dozen offices could return to view the ashes of the office's contents. The building would still stand and hundreds of other tenants could proceed with their work uninterrupted.

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The Hardwood Lumber Industry

White Brothers, the San Francisco hardwood dealers, have published their semi-annual stock list, which is a handy reference for architects and builders who desire to be guided by definite information regarding available hardwoods carried in stock for immediate use.

Regarding the hardwood lumber business and the outlook for 1916, the following summary is given in the brochure:

We desire again to direct the attention of the trade to one great factor in business building which was adopted by us with the founding of White Brothers—confidence. We have steadfastly maintained it; we shall continue to do so. You will remember in our July Stock List No. 18 we took occasion to discuss trade conditions with you—told you of the general depression, and pointed out the various causes. We also told you that there was a general awakening at hand, and gave our reasons. Every prediction has been abundantly fulfilled (excepting the hoped-for cessation of the European war), and the tide of trade has set in stronger than we thought. A perusal of the daily press will give you the pulse of the situation. A veritable lumber boom is on in the East as well as in the West, and the demand far exceeds the supply—shortage of cars and inadequate shipping facilities are two contributing factors. Every feature of the lumber industry is involved. We foresaw this condition and continued to buy, with the result that our stock of dry hardwood is now complete, but we cannot keep pace with the demand. The market has already jumped and it will continue to rise.

Imitation Marble

A new company has been formed in a western city to manufacture an artificial marble. The announcement is worthy of note only because of the fact of the modesty of the promoters. In most cases of the kind the claim is made that the sham material is in every way superior to the genuine article, not only in durability and hardness, but also in beauty. These people simply say that the artificial product can be furnished at half the cost of marble and is a better stone in some respects. This does not pin them down to too close a definition of the points of superiority. The "some respects" of their announcement can have to do with nothing save the question of price. One can always get a vastly inferior material at less cost than a fine article, but does it pay in the end? There have been any number of imitation marbles, but is there a single one that is worthy of serious consideration?—Stone.

Fresno Brick Man's Death

The Craycroft-Herrold Brick Company of Fresno reports business as being very good during the past two or three months. William Turner is now superintendent of the plant. Following the death of his father, C. J. Craycroft, on November 17, 1915, Frank J. Craycroft, his son, has become president of the company. The elder Craycroft met his death while unloosening a pipe on top of a roof twenty-two feet high. He slipped and fell from the roof, receiving injuries which proved fatal less than two hours later.

To Build Another Plant

The Los Angeles Pressed Brick Company, which now operates plants in Los Angeles, Santa Monica and Richmond, is completing preparations to build another plant, this one at Alberhill in the immediate vicinity of the large deposits of fine clay which the company has for years been using in producing its finer clay products. The new plant will be of large capacity and will produce face brick and hollow building tile. The location will enable the company to more economically handle its business in the interior cities, in the Imperial Valley and throughout Arizona.

The above cut shows the **Pratt Building Material Co.**'s Marysville sand loading plant on the Yuba River in the city of Marysville. **Every engineer, every architect,** and **every contractor** who has used **Marysville sand** says it is absolutely the best sand in Northern or Central California.

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RESIDENCE OF C. H. THOMPSON, FREMONT PLACE, LOS ANGELES
C. H. Thompson, Architect

Mr. Thompson, prior to the erection of his residence, used Buttonlath in a large flat building that he erected at the corner of Fifth and Hobart Boulevard, Los Angeles. He was so pleased with the result that he used Buttonloth throughout his residence as shown in the above photograph.

A New Substitute for Metal Lath

ONE of the newest industries in the building line and one that gives promise of revolutionizing the methods of applying plaster to both exterior and interior surfaces is the manufacture of the product known as Buttonlath. "Buttonlath" is a coined name which has been protected by copyright to designate the product of the Buttonlath Manufacturing Company, who are getting ready to start plants in several of the leading cities of the country, so as to make their product a national one.

Buttonlath is an improved lathing material in which the best features of metal lath, wood lath and plaster board construction have been successfully embodied and combined and the undesirable features successfully eliminated. Buttonlath is composed of waterproof paper and a non-porous, non-combustible plastic body, which makes it a fire retardant, sound deadener and heat insulator. It simplifies and improves construction, saves plaster, repair bills, and not only prevents plaster cracks, but makes a true wall free from waves. It is cheaper than metal lath and no more costly than a good job of wood lathing.

Buttonlath is made in the general form of plaster board in sheets 24x32 inches, and is applied in the manner shown in the accompanying illustration. The plaster buttons are stagger-spaced 1½ inches on centers in both directions; 530 buttons to the square yard. These buttons will hold fifty pounds before breaking and as the plaster gets a good grip under the edges of each button a positive mechanical key is thus formed. As a matter of fact, Buttonlath provides a triple bond for plaster—the mechanical key, suction and adhesion, thus forming a triple strength.

Buttonlath saves both on space and weight, as the solid partitions are 1½ to 2 inches thick as compared with the usual 6-inch partitions and weigh less than 15 pounds per square foot as compared with hollow tile partitions, thus eliminating an enormous dead load. In erecting solid partitions with Buttonlath there is a very great saving of time and material, as the plaster may be applied at one time and the large surface that a man can cover as compared with wood or metal lath in the same space of time means a considerable item.

In Los Angeles, where Buttonlath originated and where it has been given a most thorough tryout in practically all classes of construction, the city building ordinances have been amended so as to allow the use of Buttonlath in any class of construction. During the past year Buttonlath has been used on over two million dollars' worth of buildings costing $10,000 and upward, which would seem to indicate, in graphic fashion, the headway which it is making with architects generally.

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A BUTTONLATHED ROOM IN THE MAKING

The above photo shows a room buttonlathed and the plaster coat just being started. Note the method of breaking joints, using half sheets, alternating at starting point. Also note the use of strips and pieces of Buttonloth as potching and stripping for irregular spaces.

Buttonlath should not be confused with inflammable pulp and paper board, which is a substitute for lath and plastered walls. A Buttonlath wall is finished with a coat of plaster and looks like any other good plastered wall free from waves and plaster cracks. Buttonlath is finished by the application of a light brown coat and a finish coat, which becomes an integral part of the Buttonlath, thereby preventing failure by the parting of the first and second coats, which is so often the case, particularly by the metal lath construction. Plastered walls tested to failure invariably fail by the parting of the coats and the sheering off of the keys. Buttonlath has successfully overcome both of these difficulties.

The Pioneer Paper Company, known for many years as the manufacturers of Pioneer roofing and Pioneer building papers, has been named as distributors for California, Arizona and New Mexico. The company is enlarging its San Francisco offices, Messrs. Charles G. Gobel and F. O. Toribio being the special men in charge of this department for the Northern California territory. The San Francisco offices are in the Hearst Building. The Los Angeles offices are at 247-251 South Los Angeles street. The company will gladly send booklet and samples, together with full information, etc., to any architect or contractor upon request.

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A Set of Ten Simple Directions for Small Users of Concrete

The following directions for making concrete mixtures that are reliable are prepared by the Association of American Portland Cement Manufacturers for the instruction of occasional users of concrete in small work:

Aggregates to Be Used in Concrete Construction. — The sand, stone and gravel usually found upon the farms of the United States are generally suitable for concrete construction, provided the following precautions are taken:

(1) These aggregates must be free from vegetable matter, dirt or other foreign substances.

(2) When using bank-run gravel, the sand must be separated from the stone or pebbles by screening through a ¼-inch screen.

(3) In small concrete structures, such as drain tile, fence posts, etc., the coarse aggregate (crushed rock or gravel) should range in size from ½-inch to ¼-inch. For larger work, such as silos, barn floors, ordinary foundations, etc., coarse aggregate should range from 1½-inch to ¼-inch.

(4) The sand used should be coarse, hard, and clean, and graded from ¼-inch to fine, with the larger size predominating. Use great care in hand mixing. It is economical to buy a small machine mixer if the farmer intends to use concrete in large quantities.

Hand Mixing.—Proper methods when concrete is mixed by hand, using a two-bag batch of 1:2:4 proportions, are as follows:

(1) Size of measuring box for sand should be 2 feet square by 1 foot high, thus containing 4 cubic feet.

(2) Load sand in wheelbarrows and wheel onto mixing board.

(3) Fill sand-measuring box, lift box and spread sand 4 inches thick over board.

(4) Take two bags of cement, place contents as evenly as possible over sand.

(5) Turn the sand and cement over until thoroughly mixed, so that no streaks of cement or sand appear.

(6) Spread the mixture of sand and cement out carefully, place measuring box beside it, and fill twice with stone or gravel, then empty onto sand and cement mixture and mix thoroughly.

(7) Add three-quarters of required amount of water slowly and evenly, at same time mixing the mass.

(8) Continue mixing, adding balance of water when dry spots appear, until whole mass has been turned over three or four times. This should be sufficient. After final turning shovel into compact mass ready for wheeling to place.

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Victory for Pittsburg Heater Company

Editor The Architect and Engineer:

We are in receipt of the following telegram from the Pittsburg Water Heater Company, advising us of the conclusion of litigation, which is of the greatest importance to the gas water heating business:

"United States Court of Appeals sustains Circuit Court decision against Beler Water Heater Company, upholding our second single valve patent. This brings to successful termination all patent litigation, giving our company absolute and exclusive control for the next fourteen years over the positive dual control single thermo valve mechanism.

(Signed) "R. C. Frampton."

Yours very truly,

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State University Needs

Now that the new $615,000 hospital given to the University of California by generous friends is within a few months of completion, the Regents have formally adopted a "proposed plan for the development of the University of California Medical School." They declare that in order that an efficient teaching hospital may be organized and all departments of the medical school brought together in San Francisco there is urgent need for the following undertakings:

A new building, to cost $150,000, to house the departments of anatomy and pathology.

A new out-patient building, to cost $100,000, where may be cared for the hundred thousand people who come every year to the university hospital for free medical advice and treatment.

A new nurses' home, to cost $100,000, where a hundred nurses may live while taking the university's course for the training of professional nurses.

Alternations of existing buildings to provide for the departments of physiology and physiological chemistry, including student laboratories, and to provide administrative offices, student quarters and space for the medical library.

A central heating and power plant for the medical group.

State Housing Commission

Mr. Mark C. Cohn, chief clerk in the office of J. J. Backus, chief inspector of buildings of Los Angeles, has received the unanimous approval of both the Board of Public Works and the Los Angeles City Council to act as executive secretary of the Commission of Immigration and Housing of California. The Immigration and Housing Commission is composed of the following persons: Simon J. Lubin, president, Sacramento; Rt. Rev. E. J. Hanna, D. D., vice-president, San Francisco; Mrs. Frank A. Gibson, Los Angeles; J. H. McBride, M. D., Pasadena; Paul Scharrenberg, secretary, San Francisco; George L. Bell, attorney and executive officer.

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Is There a Reaction Against Municipal Ownership?

The rejection of municipal purchase of street railways at Cleveland and Detroit recently is taken in some quarters as a further indication of the same reactionary tendency as was exhibited in the defeat of the proposed New York constitution on the same date and various constitutional amendments in New Jersey and California during the preceding two weeks. Neither street railway vote, however, can be taken as a good reading of the municipal ownership barometer, for local disputes clouded the issues in each city.

In Detroit the city administration, the street railway commission and political leaders generally favored the purchase. Strange though it sounds, the municipal ownership league opposed it—probably through failure of the ordinance to name a price. The labor vote was against it. The railway company was willing, but apparently not anxious, to sell. In Cleveland the municipal ownership ordinance created no great activity. It was initiated by the local Socialists, and neither of the leading candidates for mayor openly favored it.

These and other fall elections, as they affected utility companies, showed discordant manifestations that would puzzle the most astute politician. Toledo turned down an ordinance giving the electric railway system a twenty-five-year franchise, so that in the Ohio city the existing chaos is continued. In Cleveland two suburban electric roads were granted rights for improvements, one of them a subway under the business section, and a new union railway station project was approved. In Pennsylvania a constitutional amendment was passed allowing Philadelphia to raise its borrowing capacity from 7 to 10 per cent of the assessed valuation, the increase applying only to money for self-sustaining improvements. This makes effective the $6,000,000 appropriation ordinances already passed for the new Philadelphia rapid transit plans. It is locally expected that the new mayor-elect is more or less hostile to the present (reform) administration's program for the extension of the city's rapid transit facilities. — Engineering News (New York).

Modesto High School Group

Messrs. Stone & Wright of Stockton are preparing plans for a group of high school buildings to be erected at Modesto at an estimated cost of $150,000. They will be one story and basement and constructed of brick and cement.

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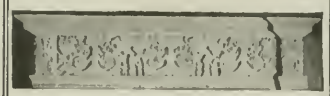

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Increase in Use of Concrete for Country Roads

The mileage of concrete pavements in the United States has increased rapidly, and it is likely to continue to increase, according to a new bulletin of the United States Department of Agriculture. This bulletin gives the estimated amount of concrete pavement in the United States in 1914 as 19,200,000 square yards; in 1909 it was only 364,000 square yards.

The principal advantages of concrete pavements which have led to this increase in popularity are said to be:

1. Durability under ordinary traffic conditions.
2. A smooth, even surface offering little resistance.
3. Absence of dust and ease with which it may be cleaned.
4. Comparatively small cost of maintenance until renewals are necessary.
5. Availability as base for another type of surface if desirable.
6. Attractive appearance.

In commenting upon these advantages, the bulletin states that the durability of concrete roads has not yet been proved by actual practice, because there are no very old pavements as yet in existence, but from the condition of those which have undergone several years' service, it seems probable that they will be found to wear well.

The disadvantages of concrete as a road surface are:

1. Its noise under horse traffic.
2. The wearing of the necessary joints in the pavement, and the tendency to crack, with its consequent rapid deterioration.
3. The difficulty of repairs when these become necessary.

In the past efforts have frequently been made to overcome these objections to a certain degree by covering the concrete pavement with a bituminous wearing surface. At present time the specialists in the Department of Agriculture hold that this can not be economically justified although it is possible that future investigation may change the situation in this respect. In the present state of road science, however, it seems that where traffic conditions are such that a bituminous surface on a concrete road is practicable a bituminous-surface macadam road would be equally practicable and certainly cheaper. Where traffic is too heavy for macadam road the bituminous surface is likely to give way and the uneven manner in which it fails tends to produce excessive wear on portions of the concrete.

For a successful concrete road, hardness, toughness and uniformity are the most essential qualities. These can be secured to a great extent by care in the selection of the constituent materials and the proportions in which they are mixed. Sample specifications are included in the bulletin, No. 249, "Portland Cement Concrete Pavements for Country Roads." These specifications are believed to typify the best engineering practice as it has been developed up to this time. They cover such points as materials, grading, sub-grade and construction.

The cement, it is said, should always conform to some standard specifications for Portland cement, such as those issued by the United States Bureau of Standards or the American Society for Testing Materials. The sand should not contain more than 3 per cent of foreign material, and sand with more coarse than fine grains is to be preferred. The coarse aggregate may consist of either crushed stone or gravel. In either case it is very desirable that the coarse aggregate be well graded in size between proper limits.

The proportion of cement to the sand and coarse aggregate combined should not be less than about 1 to 5, and the proportion of sand to coarse aggregate not less than 1½ to 3, nor greater than 2 to 3. A useful formula when gravel is used as coarse aggregate is 1 part of cement to 1½ parts of sand to 3 parts of gravel. When crushed stone is used, 1¾ parts of sand may be substituted in place of 1½ parts.

In addition to discussing the engineering details of construction, the bulletin already mentioned calls attention to the fact that ordinarily from one-third to one-half of the total cost of constructing a concrete pavement is for labor after the materials are delivered. This emphasizes the importance of efficient organization and proper equipment. Failure to take these factors into consideration frequently results, it is said, in adding from 10 to 20 per cent to the cost of a concrete pavement.

The most economical method is to have the work of mixing and placing the concrete as nearly continuous as practicable. The work should be planned with a primary view of keeping the mixer going full time. The drainage structures, the grading and the sub-grade should, therefore, be completed well in advance of the mixer and provision made for obtaining all of the necessary materials without delay.

Greeting

(From the Improvement Bulletin.)

Man wants but little here below,
Is not a business need.
That good old saw does not apply
To Live Wire's business creed.

But that is what the man will have
Whose ways are penny-wise.
It's mighty little he will get
Who will not advertise.

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Painting and Decorating

One of the successful painters of San Francisco is I. R. Kissel of 1723 Polk street. Mr. Kissel's work on the San Francisco postoffice and the new Custom House has won for him much praise and continued Federal patronage, while more recent work from Reid Bros., Fred H. Meyer, Washington Miller, Havens & Toepke, Benj. G. McDougall and G. A. Applegarth testifies to his high reputation with many of the leading architects.

Market Building and Residences

August G. Headman has prepared plans and taken bids for a one-story and basement reinforced concrete market building to be erected on Bush street west of Mason, San Francisco, for Chas. S. Howard. Mr. Headman is also the architect for five residences to cost $3,000 each, and to be erected in Ashbury Terrace, for the Progress Building Company.

City Planning for Alameda

A new City Planning Commission is to be created in Alameda, the City Council having adopted an ordinance establishing the new organization. There will be five members, to be appointed by the Council. The commission will make recommendations as to the laying out of the city on correct lines, with the establishment of various home and industrial zones.

Chimneyless Houses

The utilization of electrical current is destined to be the true obviative of the smoke evil in cities. This is not a fanciful conceit. In Scotland, where dollars are by no means disregarded, there is already a town lighted and heated by electricity. To quote from the Electrical World:

"Bungalows without chimneys, completely equipped for electric heating, cooking and lighting, are features of a new 'electrical garden suburb,' as it is called, at Dumbreck, near Glasgow, Scotland. The houses of this interesting settlement are of four, five and six rooms, and are finished in stucco and roofed with asbestos tiling. These dwellings were designed particularly for all-electrical service, and the absence of chimneys adds, indeed, to the simplicity and symmetry of the architecture."

Theater Alterations

Plans have been drawn by M. Mattanovich of San Francisco for alterations and a new gallery in the Haight street theater, the work to cost about $15,000.

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MARCH 1916

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ENTRANCE DETAIL, ST. PATRICK'S CHURCH, BISBEE, ARIZONA
ALBERT C. MARTIN, ARCHITECT

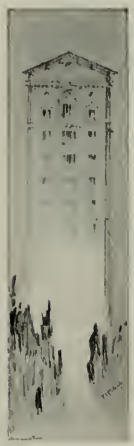
Frontispiece
The Architect and Engineer
of California
For March, 1916

THE
Architect and Engineer
Of California

VOL. XLIV MARCH, 1916 No. 3

Fifth Annual Architectural Exhibit at Los Angeles

By ELMER GREY, Architect.



THE Fifth Annual Architectural Exhibit of the Southern California Chapter of the American Institute of Architects, recently concluded in Los Angeles, was noteworthy because of the fact that it was inaugurated and brought to successful issue entirely by private enterprise, rather than through the action of the Chapter.

There had been considerable doubt in the minds of the architects whether an exhibit this year would be a success, but Miss M. L. Schmidt, who is in charge of the permanent exhibit of building materials in the Metropolitan building in Los Angeles, took it upon herself to remove the doubt and assume the management.

The exhibit was held on the sixth floor of the Metropolitan building. Its cost was sustained partially by the architects and partially by exhibitors in the permanent Metropolitan exhibit before mentioned.

The opening night was marked by a reception, on which occasion there was good music and an attendance of over a thousand.

The exhibit contained a remarkable number of interesting drawings, sketches and photographs in spite of the dull business years that we have been passing through. Conspicuous among these might be mentioned the following: The design for the proposed new Chautauqua of the Pacific at Mt. Washington, Los Angeles, by Messrs. Allison & Allison, which created considerable attention. A number of photographs of good school work upon which this firm have rather specialized was also noticeable.

Mr. Myron Hunt's Spanish Colonial tower of the Congregational church of Riverside, and his new Music Hall for Pomona College were conspicuous contributions.

The writer exhibited a number of water colors, some being sketches for the Golf Club at Brentwood Park, near Los Angeles, and a church at Palo Alto; also various designs for stone mantels. A replica of one of these mantels in artificial stone, set up complete, was shown.

The drawings for the new Citrus Experiment Station at Riverside by Messrs. Lester H. Hibbard and H. B. Cody were also noticeable contributions. Mr. Cody's inimitable renderings have been the admiration of Los Angeles architects for years, and he has maintained the same standard this year.

Editor's Note.—Some splendid examples of ecclesiastical architecture, shown at the exhibition, will be published in the April number. Lack of space prevented their publication in this issue.

RESIDENCE OF C. S. EATON, OAK KNOLL, PASADENA (ENTRANCE DETAIL)
R. D. Farquhar, Architect

GARDEN IN PASADENA HOME
R. D. Farquhar, Architect

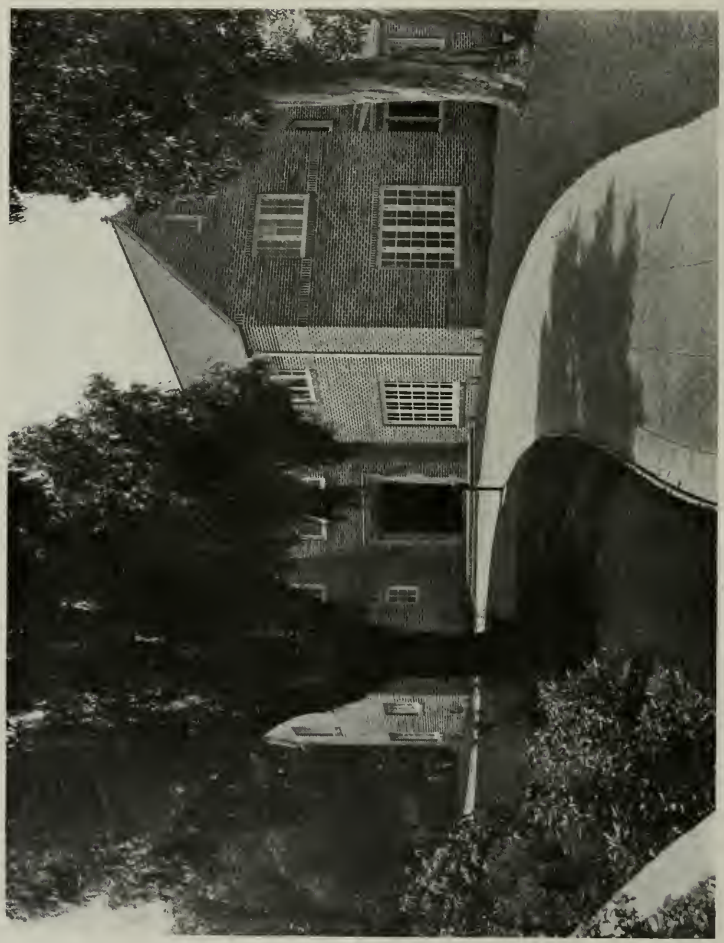
RESIDENCE OF
J. N. HARPER, ESQ.,
PASADENA

Reginald D. Johnson,
Architect

RESIDENCE OF HARRY C. CULVER
Arthur R. Kelly, Architect

THE TERRACE OF A RESIDENCE ON THE HOLLYWOOD HILLS
ARTHUR S. HEINEMAN, ARCHITECT

PATIO OF THE TERNARY CI RESIDENCE ON THE HOLLYWOOD HILLS
ARTHUR S. HEINEMAN, ARCHITECT



RESIDENCE OF GARFIELD R. JONES, PASADENA
WALTER WEBBER, ARCHITECT

RESIDENCE OF J. C. DANIELS, PASADENA
Allison & Allison, Architects

Mr. John C. Austin contributed a large and very beautiful water color design for the new Methodist Episcopal church of Los Angeles. It is decidedly Spanish in feeling, without the crudities so much of the Mission work possesses. Mr. Austin's design for the new Los Angeles High School building was very interesting. In connection with his work, there were contributed several beautiful water colors by the Tiffany Studios, for the interiors of some of his residences. The decorations and furnishings of the reception room were contributed by the Tiffany Studios, also some very valuable oil paintings.

Mr. Reginald Johnson of Pasadena contributed a number of interesting water color designs for residences, as well as a number of photographs of completed work.

Messrs. Hunt & Burns showed various photographs of their interesting Southwest Museum. They also showed photographs of the new Roosevelt Dam at Yuma, Arizona—the architectural work done by them and the engineering work done by Louis C. Hill. A number of photographs of residences by the same architects were also submitted.

Mr. S. Tilden Norton showed a carefully studied and beautiful design for a residence in Pasadena for Mr. Wood. Also an interesting Civic Center scheme for Los Angeles.

One of the finest exhibitions of water colors in the exhibit was that by Messrs. Pierpont & Walter Davis, the water colors being made by the latter. These designs were of houses for the Garden City county of California. Mr. Walter Davis has been a Rotch scholar, and his drawings show the result of this exceptional training.

A number of beautiful water colors were submitted by Kegley & Gerity—also by the same firm various photographs of residences and churches.

Mr. Lyman Farwell exhibited some very delightful foreign sketches, as well as working drawings in color of foreign mosaic, etc.

Mr. W. J. Dodd showed a number of interesting lead pencil drawings slightly tinted with color, representing various projects in and around Los Angeles.

Mr. Harry A. Nielson showed a number of very fine European water color sketches.

Mr. Arthur R. Kelly submitted a collection of interesting drawings and photographs of resident work.

Mr. Henry F. Withey showed a number of photographs of school houses done by the firm of Withey & Davis, the designs of which are of a high order.

RESIDENCE OF J. C. RIVES, ESQ., LOS ANGELES
A. F. Rosenheim, Architect

MAIN HALL, RESIDENCE OF J. C. RIVES, ESQ., LOS ANGELES
A. F. Rosenheim, Architect

ENTRANCE TO RESIDENCE OF W. J. DODD, LAUGHLIN PARK
W. J. Dodd, Architect

RESIDENCE OF F. W. MARTIN, LOS ANGELES
Hudson & Munsell, Architects

A SOUTHERN CALIFORNIA RESIDENCE
Pierpont & Walter S. Davis, Architects

A RESIDENCE IN PASADENA
Frank L. Stiff, Architect

RESIDENCE OF H. D. LOMBARD, BEVERLY HILLS
Hunt & Burns, Architects

VERNON BRANCH LIBRARY
Kysor & Biggar, Architects

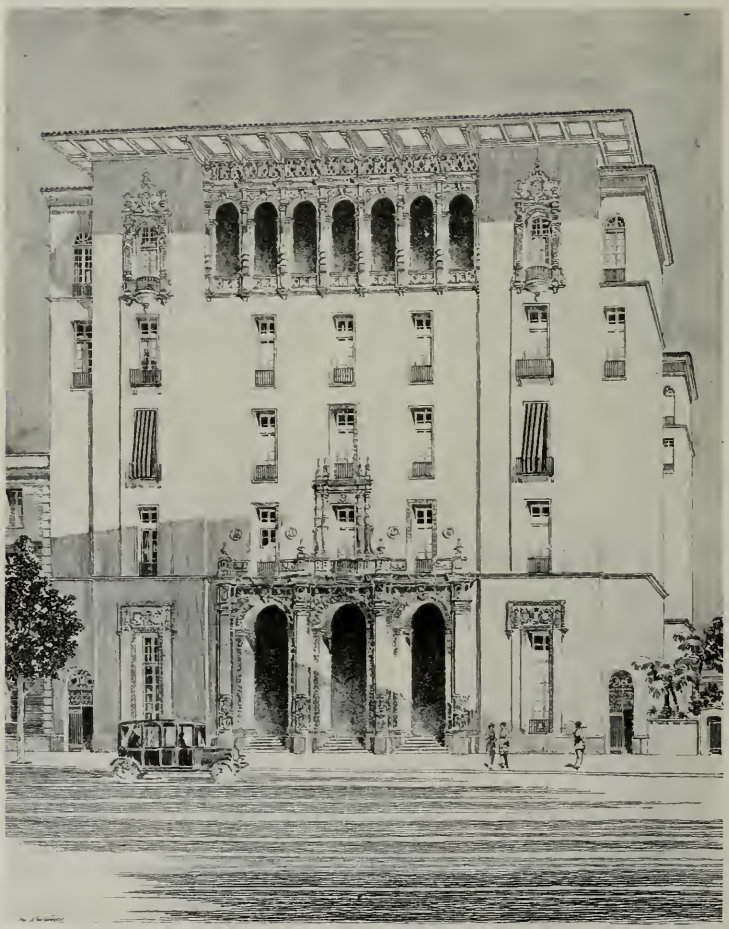
SKETCH OF BRENTWOOD PARK GOLF CLUBHOUSE
ELMER GREY, ARCHITECT

PATIO BRENTWOOD PARK GOLF CLUBHOUSE
Elmer Grey, Architect

Messrs. Walker & Vawter showed some drawings for the new Bible Institute of Los Angeles, and others for a large hotel project at Santa Monica, which are notable not only for their good designs but also for their inimitable rendering. They constituted one of the most interesting of the exhibits.

Mr. Albert C. Martin submitted a beautiful water color for a church in Bisbee, Arizona; also working drawings of other church work.

HEADQUARTERS MUNICIPAL GOLF COURSE, LOS ANGELES
Hunt & Burns, Architects

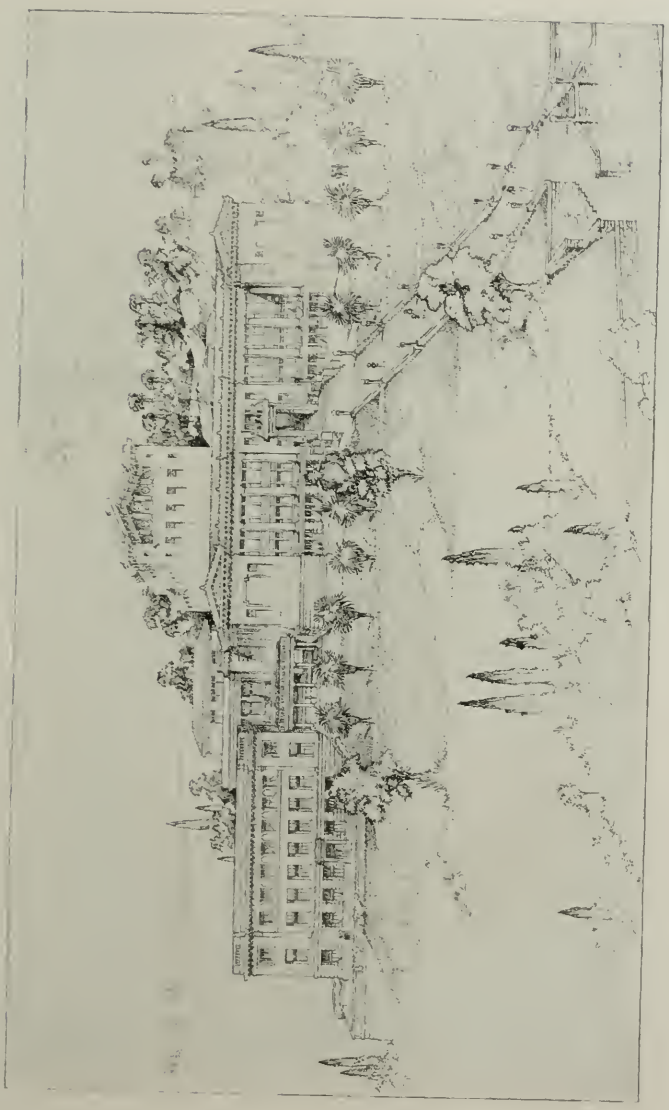


PROPOSED CLUBHOUSE, LOS ANGELES
MONTGOMERY & MONTGOMERY, ARCHITECTS

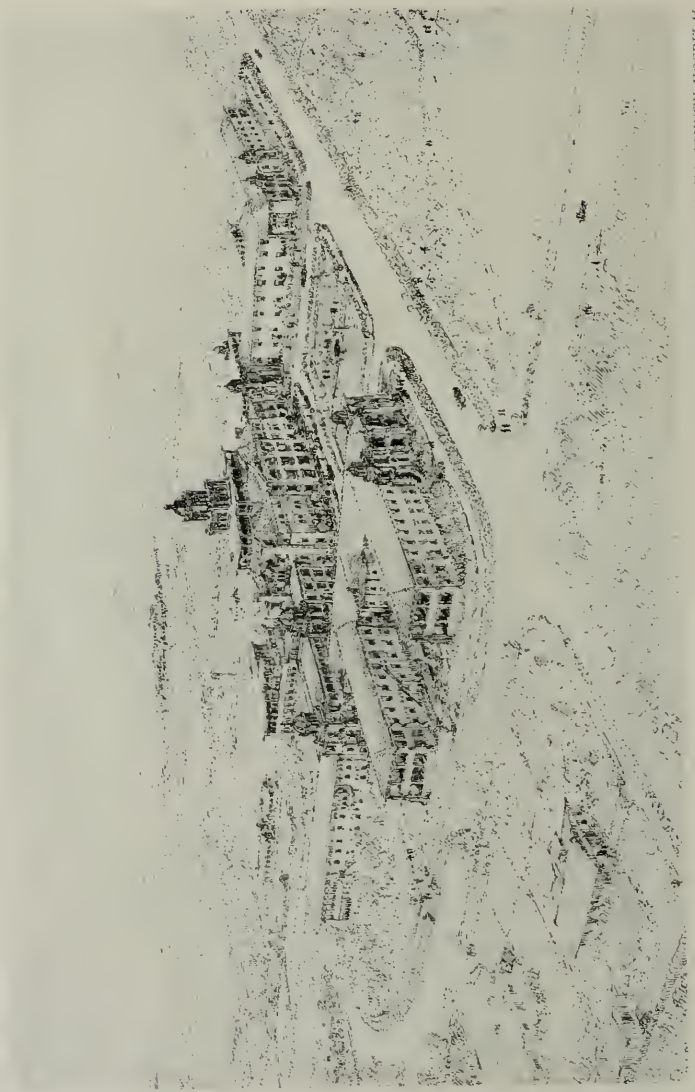
ART BUILDING, POMONA COLLEGE, CLAREMONT,
Myron Hunt, Architect

SOUTHWEST MUSEUM
Hunt & Burns, Architects

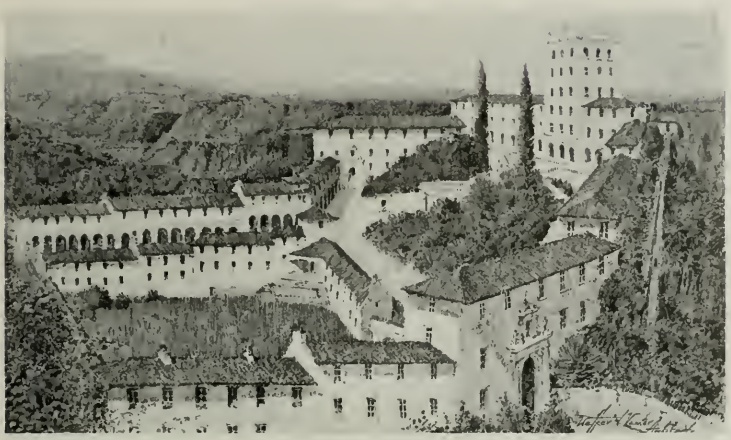
NORTHEAST BRANCH PUBLIC LIBRARY, LOS ANGELES
LESTER H. HUBBARD & H. B. CODY, ARCHITECTS



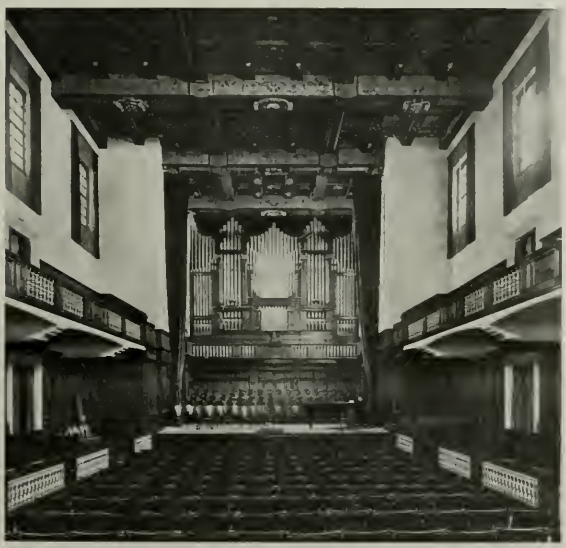
LINCOLN HIGH SCHOOL, LOS ANGELES
NEEDHAM & CLIVE, ARCHITECTS



SKETCH FOR SAN BERNARDINO COUNTY HOSPITAL
LYMAN FARWELL,
ARCHITECT



HOTEL PROJECT
Walker & Vawter, Architects



INTERIOR, MUSIC BUILDING, POMONA COLLEGE, CLAREMONT
Myron Hunt, Architect

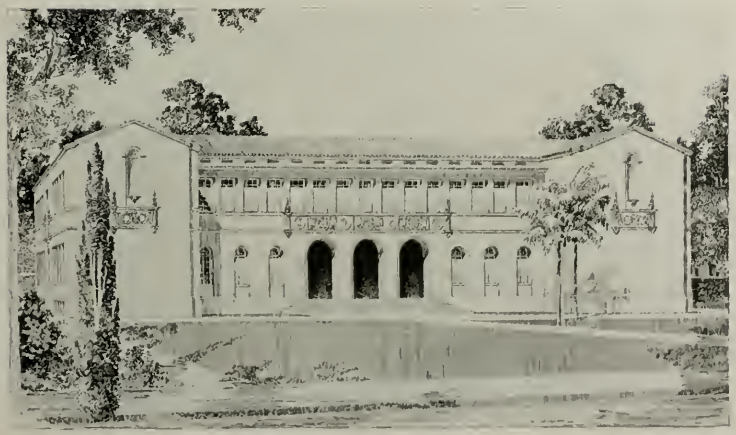
ARTESIA GRAMMAR SCHOOL
Withey & Davis, Architects (By H. F. Withey)

CHINO GRAMMAR SCHOOL
Withey & Davis, Architects (By H. F. Withey)

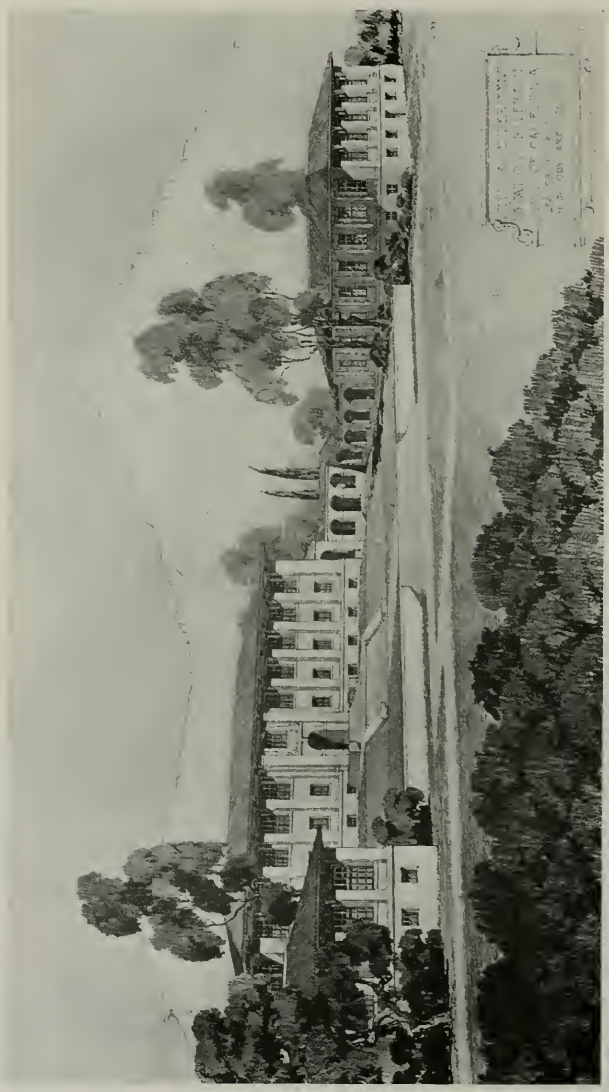
CHINO GRAMMAR SCHOOL, CHINO, CALIFORNIA
WITHEY & DAVIS, ARCHITECTS (BY H. F. WITHEY)

LOS ANGELES HIGH SCHOOL
JOHN C. AUSTIN, ARCHITECT

ENTRANCE TO GRAMMAR SCHOOL, HOLTVILLE
Allison & Allison, Architects



GRAMMAR SCHOOL, LOS ANGELES
Montgomery & Montgomery, Architects



CITRUS EXPERIMENT STATION, UNIVERSITY OF CALIFORNIA, AT RIVERSIDE
LESTER H. HIBBARD & H. B. CODY, ARCHITECTS

CITRUS EXPERIMENT STATION, UNIVERSITY OF CALIFORNIA, AT RIVERSIDE
LESTER H. HIBBARD & H. B. CODY, ARCHITECTS

ENTRANCE TO STANDARD OIL BUILDING, WHITTIER
Alfred W. Rea & Chas. W. Garstang, Architects

CARVED STONE CAPITALS,
RESIDENCE OF LIEUT. GOV. A. J. WALLACE
Arthur B. Benton, Architect

WHITTIER HEIGHTS MAUSOLEUM
JOHN J. FRAUENFELDER, ARCHITECT

SPRING STREET DETAIL, MERCHANTS NATIONAL BANK, LOS ANGELES
WM. CURLETT & SON, ARCHITECTS

FRONT LOGGIA, MERCHANTS NATIONAL BANK, LOS ANGELES
WM. CURLETT & SON, ARCHITECTS

CHAPEL OF THE HARVARD SCHOOL FOR BOYS
C. M. Winslow & H. D. Johnson, Associated Architects

Special days and evenings were provided for Chamber of Commerce, Builders' Exchange, School Classes, Ad Club, Rotary Club and Realty Board. The attendance was remarkable and the exhibition attracted more general interest than any held in Los Angeles.

Following is a complete list of the exhibiting architects:

Allison & Allison
John C. Austin
A. B. Benton
B. Cooper Corbett
Wm. Curlett & Son
Edgar H. Cline
Davis & Davis
W. J. Dodd
Lyman Farwell
John J. Fraunfelder
H. W. Glidden
Elmer Grey
A. S. Heineman
Froham & Martin
Hibbard & Cody
Hudson & Munsell
Hunt & Burns
Myron Hunt
Reginald Johnson
Arthur R. Kelly
Frank R. Kegley—Scott Geraty
Chas. H. Kysor
Marsh & Howard
A. C. Martin
Montgomery & Montgomery
Paul A. Needham
G. F. Skilling
Frederick Noonan
S. T. Norton
Robert Orr
W. C. Pennell
Thos. P. Power
Rhea & Garstang
Frank Stiff
A. F. Rosenheim
Train & Williams
E. C. Taylor
Tuttle & Angel
Walter Webber
Henry C. Withey
Walker & Vawter

Artless Architecture

"Some Current, Errant Tendencies in a Noble Profession"

By F. W. FITZPATRICK, Consulting Architect.

CAN a fellow help thinking and, occasionally, if he has gloomy, dismal thoughts, e'en though his digestion be perfect, is he always blameworthy?

I have just received from a friend a splendid annual edition of a big Western paper. Sumptuously gotten up and its hundreds of pages gorgeously illustrated, yet it gives me the glooms architectural! Withal, that city is one of the handsomest cities in the land and its architecture not one whit less attractive than that of any other big city. But there on those dozens of pages are photoed groups of thirty or more buildings in a bunch, about as big a collection of architectural representations as one ever sees at a time. Now shake all those buildings up together, then, blindfolded, pick one from the bunch and you have the prototype, the average of the lot. Dismal, awful monotony! Yet, I repeat, that city sins no worse in that direction than do the rest of cities. The utter sameness, the absolute absence of the slightest variation, the awful paucity of architectural expression hits one with a club. A shaft with few or many stories of openings, a cornice or lid on top, so many bands constituting a base, and there you are.

But, remember, every one of those hundreds of buildings was especially "designed," an architect labored over it and brought it forth perhaps most painfully. He detailed every item, even the sash and frames had to be specially made, every molding cut to a special pattern and this nightmarish monotony is the sole result!

I'm not clamoring for the wierd absinthe and cigarette dreams of originality that some of our French friends perpetrate in the name of Architecture, but it does seem to me that we could get up a wee bit less of a monotonous run of stuff than we've been giving our cities, or else frankly throw up the sponge and admit that we've been taking money under false pretenses and that there really is no sense in a man's employing an architect.

I submit that any builder of ordinary intelligence could supply the slight variations one notes in any such group of buildings as those before me. It would not take an overdose of intelligence to supply the variations we find even in the stately capitols and ultra-pure "classic" governmental buildings that are springing up all about us. They're all in the same key, the same hackneyed and overworked theme. He would use stock sash and frames and stock moldings more or less artistically varied in combinations, he'd use stock bands and cornices juggled at different levels and his creation, his "design," would be not one whit less attractive or original than ours, and would have the saving grace, besides, of costing decidedly less, for he could save all the expense of especially designed details (that in the final analysis are absolutely the same old ding-dong) and the architect's commission besides. Take a half dozen of our recent capitols, put pictures of them before you and tell me in all frankness if you can see any reason for each having an architect go through the motions of "designing" it. Blueprints of any one of them would have served equally well for all. One fellow puts on a square top, the other uses a pediment, but their cousinship is pronounced, indeed you've got to look mighty closely and be a keen discriminator to be able to tell 'em apart. Silly rot, I call it.

And if we sin in the artistic part of the program, how about the planning, the practical part; how about the usefulness, the economy, the availability and fitness of that building?

The average architect really believes that his most important function is fulfilled when once he has "designed" a beautiful, much becolumned and highly ornamental exterior for a building (just like or nearly like 43,556 other buildings). He stands ready to sacrifice almost any advantages of plan or economy or construction to that "front." Indeed, his whole education and training has been "frontward," so one can't wonder much at that most natural and highly cultivated bent.

But it has done him harm and may yet be the Waterloo of the profession. Men who pay for buildings have grown to want more than monuments to their architects' artistic and decorative ability. They want profit, they want every penny spent where it will do the most good, they want service, in other words; and are realizing that they are not getting it in the highest degree from their architects.

I have been preaching the gospel of greater service, more thoroughness on the part of the architects, exhorting them to set aside their wonted disdain of the merely practical details of planning and building, but the architects have poohpoohed it all, thought I was just scolding or sermonizing or bidding for more business as a consulting or advisory associate. They rather fatuously believed they were giving all that could be expected of them in the regular, accustomed, usual manner sanctioned by long precedent, for were they not doing just as had been done by architects for years and years?

But that is exactly what the people don't want. Things have progressed, more is expected of everyone; he who lags behind is liable to be lost, forgotten and new ways devised of doing what he may have so well done years ago. That is what is happening in Architecture, the writing I've seen upon the wall, the construction of buildings by the construction companies direct, with architects as mere subordinates, not as directors and representatives of the owners.

Our architectural journals are too prone to look at and discuss only the one side, the architects' side, of any controversy that may arise. That's a mistaken theory of loyalty. Better far to weigh both sides, see what there is to them and if the other fellow has a real grievance then honestly advise and endeavor to have the architects correct that error so that particular complaint need not again be made against them.

The consensus of opinion among the owners of buildings is that they do not get the best that can be procured for the money invested, that architects are too complacently satisfied with the effort to produce a pretty "front" and ignore or do not know much about the real economy of planning and construction and specialized requirements.

But let us back to the artlessness of Art. Even the mere decoration of our buildings. The word Art means more and yet less than most of us have supposed. Let us glance at the term broadly, afterward it will be easy enough for each to make its application to Architecture and I venture to believe that there will be agreement that much of our building is indeed Artless.

Before rambling too far afield, let's agree as to what Art is. At first blush it may seem simple enough to decide, but lexicologists as well as artists and other recognized authorities have fussed for years over the term

and are fussing still. We find variants of the term that I think have no place there, distinctions and additions that have crept in and are almost recognized. Today you have to specify and term your art fine art, useful art, mechanic art. Why, even our pugs practice a pugilistic art, and we are barbered by a tonsorial artist and dressed by a sartorial one. And it is all correct enough in a general way. Anything that is done well can be rightfully credited up to Art. Some, and with a fair amount of justice, classify all the pleasurable elementary emotions or sensations as Art, Sublimity, Beauty, Grace, Harmony, Melody, Pathos, Proportion, Order, Fitness. There is an art of living, a gastronomical Art, even the Art of hatred. And others would dissociate Art from everything practical, making it so that its votaries withdraw themselves, in a sense, from the urgencies of practical life, and become esoteric and ultimately nuisances of the first water.

The middle ground, the one I tread and would have you tread with me, is but the limiting of the term to the gratification of but the two senses (that are not monopolistic) of sight and hearing by the refinement of the objects they gratify.

Some again would have Art always purely decorative; true Art is the making of everything beautiful as well as useful. A picture painted without any regard to its decorative value, the proper filling of some space, is but a bauble; a bow on a lady's dress that has no function, but just a "decorative" bow, is, I claim, inartistic, useless, meaningless. Art is not essentially embellishment; it is the function of doing things well, gratifying those aforesaid senses.

Mother Eve had the first glimmerings of Art when she put on a pretty leaf and got it fixed in a becoming manner, at a certain graceful angle! And Art is as old as Man. Indeed, I am not prepared to say that the so-called lower animals are entirely strangers to it. To our minds, they certainly seem to at least unconsciously indulge in it and show signs of keenest appreciation of it.

Nor must we hug ourselves with the delusion that we have exclusive enjoyment of it, for the veriest savage shows the keenest appreciation of it. No greater mistake is made than that of believing the common people, the uneducated, have no sense of Art, therefore it is wasted upon them. The toughest little street arab instinctively discerns the artistic and the inartistic and the best criticism I ever heard of a modern building was given by a street car motorman.

The history of the origin and development, growth and decline of beautiful artistic forms constitutes a portion of the history of civilization. As regards each particular people, the history of their efforts, to conceive and express absolute perfection, or what is commonly called ideal beauty, in form and color, is, with the single exception of the history of their speculative opinions, the most reliable test of the stage of progress which they have attained. Nor is it as an indication of the abundance of their external resources, or even of their intellectual activity alone, that the history of the art of a people is thus important. It determines their moral, and even in a certain sense their religious position, for the inseparable connection between the beautiful and the good is in no way more clearly manifested than in that fact, that the first inroads of demoralization and social disorder are invariably indicated by a diminution in the strength and purity of artistic forms, especially in architecture.

PRELIMINARY SKETCH FOR GROUP OF HOUSES, BURLINGAME, CALIFORNIA
HOOD & SIMPSON, ARCHITECTS, SAN FRANCISCO

LAC D'AMOUR, BRUGES

The Landscape Architecture and Planting of Suburban Residence Districts†

By HORACE G. SIMPSON, Architect.*

IN two previous issues of The Architect and Engineer the author has endeavored to outline the existing conditions of our suburban residential districts and to indicate some of the more obvious opportunities for betterment. General methods and agencies of development were considered in the first paper, while in the second attention was more particularly directed to the design of the individual house. But no discussion of the problems of suburban residence architecture would be complete without mention of the landscape treatment and the planting. No feature of the work has a more vital effect upon the aspect of our cities, or upon the happiness of their occupants.

Fortunately, of late years, much skill has been employed upon the general planning of our suburban districts and in the newer additions we are getting away from the rectangular monotony which formerly prevailed. It seems, however, that the arts of planning and of road building have received more attention than that of planting. Many examples could be cited where planning and grading of a high order have totally failed of their intended effect through the trivial and temporary character of the planting. And in other cases, while some success has resulted, it has entailed an outlay for maintenance out of proportion to the effect secured.

Any consideration of planting for the vicinity of San Francisco bay should invariably be prefaced by a note upon our special, almost unique, climatic conditions. And any scheme of planting which neglects these conditions is foredoomed to failure. We have at times sunlight of almost tropic intensity, while at other times the sun is feeble or obscured by fog;

†The third of a series of papers begun in the December issue.
*Of Wood & Simpson, Architects.

the long, arid, rainless summer is succeeded by a wet season, when the ground in the shade is scarcely ever dry; and in the spring the strong westerly trade wind blows almost continuously for two or three months.

These conditions require a scheme of planting specially suited to them and quite different from that which is successful elsewhere. We must seek to regulate the kind and number of trees so as to secure an adequate setting for the houses without undue density or excessive shade, while the sweep of the west wind must be obstructed by hedges and shrubbery which shall be low enough to admit the sun over them into the house and garden. Failure in these respects has produced effects which are gloomy and depressing to the mind, and detrimental to the health of the body. The high fog, frequent during the summer, introduces a special problem of color which appears not to be generally understood. During these high fogs a sort of dull, leaden color overspreads the earth, which robs colors of their brilliance and contrasts of their usual intensity, and this condition must be offset by the use of bright, warm hues against a solid dark background. By this means we are able to simulate an effect of sunshine when the real thing is denied us. It seems strange that our arid season receives such scant consideration and that no more effort is made to develop a style of planting specially fitted to its demands. In the midst of this season when the earth is parched and brown, and the verdure overladen with dust or sere and wilted, there is a keen delight in planting which has a fresh, moist appearance, and to secure this effect without excessive irrigation and undue expense we must use an abundance of deep, cool, green shrubbery, especially that which has very glossy leaves.

COTTAGE AT NORDHOFF
Myron Hunt & Elmer Grey, Architects

ANN HATHAWAY'S COTTAGE, STRATFORD, ENG.
An Adequate Setting without Excessive Shade

With these requirements of our climate in mind, let us consider the means by which an adequate and finished setting may be achieved. The elements with which the designer works in producing his picture are the planting, architectural accessories, such as retaining walls, balustrades and fountains, and the gardens

ST. JOHN'S HOUSE, WARWICK, ENGLAND

and verdure of the individual house lots. Let us consider these successively.

At one time it was customary to pave the roadways and sidewalks of the residential districts in much the same way as the streets of the business section. This practise was at once wasteful and devoid of beauty, and is now generally abandoned. The more modern way is to keep a generous width for the street reservation, but to pave only a portion, while the remainder is left for planting. Often the paved way is made wider than necessary, and the planting strip or border too small for any real effect. Even more frequently there is an error of judgment in using plants which properly belong in gardens, and are neither suitable in scale nor robust enough to withstand the inevitable abuse which their position occasions. The result is very ragged and untidy borders or, if well kept, ones which require undue care and expense and a great deal of water. Our suburban roads would be vastly improved by making the parking space very much wider and planting it with hardy evergreen shrubs, which would require no attention after they were well started. A more general use of trees along the roads would further enhance the effect. These should be carefully chosen for size and color and should invariably be deciduous so as to permit unobstructed sunlight in winter.

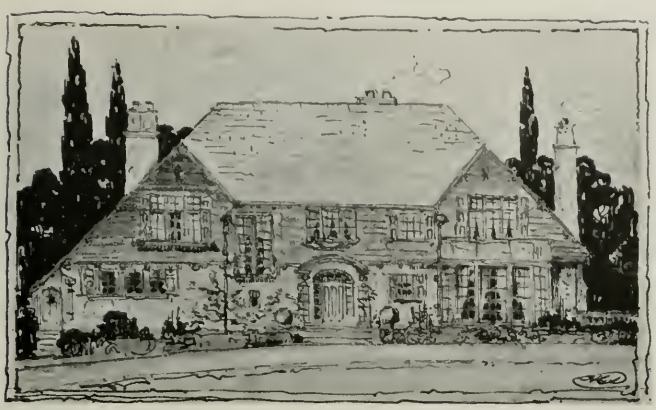
EFFECTIVE PLANTING AT ENTRANCE (From "The Landscape Gardening Book" by Grace Tabor)

There is an undeniable tendency to overdo the architectural accessories, such

RETAINING WALLS AND ACCESSORIES IN AN ITALIAN GARDEN

as retaining walls, bridges and the like, to forget that they are accessories and to give them undue prominence. Features of this kind should always be justified by obvious necessity, as otherwise they are a waste of money and a detriment to the landscape. They also should have a character suited to their function and their setting. A retaining wall backed by tons of soil should be of such robust proportions as to give unmistakable evidence of its stability, and should be built of material which gives it an indigenous appearance. It is unfortunate that the present cheapness of light-colored cements and terra cotta has caused the introduction of an extremely artificial style of accessories, based largely upon the classical styles, often trite or trivial in character and quite invariably "overdressed." Features of this character are as incongruous among a group of cottages as a frock coat at a picnic. We have also an abundance of seats where no one ever sits, of gates which may not (legally) be closed, and of archways and exhedrae whose uselessness is unquestioned and whose beauty a debatable point. A more general use of undressed stone copiously laden with vines and an aspect of robust, unpretentious solidity and of obvious utility, would cause the necessary structural accessories to recede to

RETAINING WALL, GARDEN OF THE DOWAGER QUEEN'S PALACE, ROME, ITALY



SUBURBAN RESIDENCE *WOOD & SIMPSON, ARCHITECTS*
Showing Indication of Planting

their proper place in the general picture. Of fountains it seems in order to regret that they are not more numerous and that their overflow is not more frequently turned to good use in mitigating the dryness of our summer.

The planting of the individual house lots is the most difficult part of the problem and affecting, as it does, the larger portion of the available land, it is the most important. The verdure should be arranged to give the required degree of privacy to the home, to screen and protect the garden, if there is one, and in addition there should be enough tall planting to give interest to the sky-line, and to contribute to the general embellishment of the district. The requirements of climate should be constantly in mind; excessive shade avoided and protection from the winds assured, and much thought should be given to economy of labor and of water. A simple place, well kept, is far better than an elaborate one which shows the marks of neglect and drought. Much of the planting should be of a permanent character and flowers and delicate herbage kept well back from the street. Perhaps the most important requisite of all is to secure privacy. There has been, in America, a mistaken tendency to regard privacy as a species of snobbishness, and this

GARDEN OF SHAKESPEARE'S HOUSE, STRATFORD, ENGLAND

view has caused our grounds to be laid out in a way which makes them a spectacle for the passerby rather than a quiet retreat for the owner. To secure this desired effect of privacy upon the usual small house lot, without obstructing the sunlight, is a difficult task, requiring great care in the selection and placing of the verdure which is used as a screen. The designer should continually guard against overdoing the thing and making the sense of enclosure oppressive and gloomy. The question of having flower gardens or none is settled by the size of the lots as often as by the wishes of the owners. Its introduction adds to the interest, but if the lot be small the problem taxes the skill of the designer to the utmost, and successful examples are not numerous. The most common error in small flower gardens is one of scale; the attempt is made to reproduce the elements of large formal gardens in miniature and the impression is one of confusion rather than of simplicity and true beauty. Often, too, the spirit of ostentation gets the better of judgment and good taste, and the garden becomes a useless "show place" instead of the retreat for the tranquil enjoyment of flowers which it should always be.

HOUSE AT OXFORD, ENGLAND
Walter Cave, Architect

Observation seems to show that this spirit of ostentation is waning. It is, in fact, merely a blind and misguided striving after elegance and variety in the mode of life, and as the benefits of education and travel remove this blindness it may be hoped that our suburban life will attain the ideals of simplicity and beauty and our suburban architecture and gardening fitly express these ideals.

PRELIMINARY SKETCH OF SUBURBAN RESIDENCE
Wood & Simpson, Architects

A Praiseworthy Innovation at Columbia

Curator RICHARD F. BACH in the Architectural Record.

COLUMBIA UNIVERSITY has inaugurated a notable experiment in co-operation between the teaching and the practice of architecture. On the assumption that nothing but good could accrue to both school and profession through a proper understanding and reciprocal appreciation of one another's provinces, the university authorities decided to invite three architectural societies of New York City to elect three practicing architects each, to form a committee of visitors, whose advice as based upon periodic inspections of the school's plant or equipment, current work and mode of teaching could be depended upon as a guide in checking up scholastic results by professional standards and demands. The three societies and the elected members from each to compose this committee are the following: From the New York Chapter of the American Institute of Architects, Bertram G. Goodhue, Charles A. Platt, and Egerton Swartwout; from the Society of Beaux Arts Architects, Thomas Hastings, Henry F. Hornbostel and Lloyd Warren; from the Alumni Association of the School of Architecture of Columbia, Goodhue Livingston, John Russell Pope and I. N. Phelps Stokes.

It will be noted that the names of the members of the committee are those of practitioners in the forefront of their profession, which offers at once an indication of the favorable impression made by the plan in the ranks of those who practice only and never preach and also a good augury for the welfare of the project because of the predestined high quality of the suggestions and advice to be forthcoming.

The committee in question is purely an advisory one, but its work is none the less of great administrative value. Its recommendations will be the upshot of frequent attendance at the school, and, once submitted, it will be the function of the authorities of the school to make proper adjustment wherever academically feasible to accord the existing curriculum with the most urgent practical demands of the great body of architects who employ its graduates.

The committee has already begun upon its duties and has on several occasions inspected the current output at Avery Hall. A schedule has been arranged on the basis of which three members of the committee, one from each of the groups mentioned, will be invited to attend each of the judgments of work in design held during the year. Since about ten judgments are held at Columbia in the course of one academic year, this will offer a number of opportunities for each of the nine members of the committee to be present. On the occasions of each judgment the visiting members are also requested to attend classes, representative collateral work in the various branches is exhibited, all of the teaching staff are on hand to explain the method of teaching in their respective departments, and an instructor is deputed to act as academic Cicerone for the day.

We may frankly say that Columbia deserves the utmost credit for its understanding initiative in thus accepting the professional world in a definite physical sense as its pace maker. In selecting architects to be members of the committee of visitors the three participating architectural bodies have set their standard high. A noteworthy piece of work, quite in accord with the spirit of the day, has been undertaken and we may confidently look forward to an equally noteworthy achievement in architectural teaching. There should be no apprehension on the supposition that it is now planned to translate the school into terms of the office, for there is not sufficient syn-

onymity of purpose in the two fields, however closely they may be allied in the order of supply and demand. The school must in the final balance maintain its academic point of view; it cannot be made to assume—except in its design branch alone—the guise of the atelier; for the proper quantities of historic, theoretic, scientific and cultural material, not to mention untold hours of drawing, modeling and construction, must hold their place in the well-rounded and closely co-ordinated system of teaching. The committee of visitors, then, will not attempt to govern but to advise. The technicalities of administrative control will remain as heretofore in the hands of the administrative board. On the other hand, the committee will call into play its hard-bought experience, its knowledge of the fundamental demands of practice, as well as its cherished ideals of a great art ingrained through many qualitative tests, so that the scholastic intention may be brought to a full grasp of the objective of professional practice. Beyond the appointment of a practicing architect as director, virtually nominal, so far as his definite administrative function is concerned, or the giving of a few lectures annually by men busy in the profession, the experiment at Columbia is, so far as we know, the first decisive step in the direction of de facto co-operation between a school of architecture and the profession at large. We are convinced that much good will come of it and that, as other schools adopt similar procedure, both schools and profession will evince an increasing interest in one another's purposes, and boldly we say it—also in one another's shortcomings. The new dispensation offers the chief advantage of all co-operative plans—mutual benefits.

* * *

The Apartment House Era

Six hundred private dwellings are shown to have been torn down in New York the current year to make room for flats, tenements and apartment houses. The private dwelling is becoming a rarity in the metropolis, with prospects that it will become wholly extinct in due time. Economy of ground space demands that six to sixty families must live one over the other, in an allotment of earth space intended for one. Aside from that consideration, we suspect that New Yorkers are indifferent as to the fate of the private home. In the swirl of metropolitan existence they care far more for those modern comforts which are provided by the steam heated apartment than for the home-like environment of the private dwelling. So New York becomes one great network of stone and plaster apartments, flats and tenements, presenting something of the aspect of a cliff dweller's settlement.

INTERESTING PLAN FOR AN APARTMENT HOUSE, OAKLAND, CALIFORNIA
Charles W. McCall, Architect

New Ideas About Concrete Floors*

By IRVING J. GILL, Architect.

WHY do most people dislike concrete floors? Partly because we are all slaves to habit, partly because concrete floors are not what they really ought to be.

Twenty years ago I built for myself a concrete floor. I expected it to be cold, I expected it to be damp. I expected it to be all the uncomfortable things people said it would be. I found it warm and dry and all the comfortable things people had not said it would be. Best of all, I knew it would never harbor the vermin of sorts that infest old wooden flooring, mice that scamper at night, or the accidental cat.

The charges against the concrete floor are precisely those made years ago against the cement sidewalk. We had come from dirt paths where feet find comfort in the happy medium between dust and mud, and the board sidewalk with its awkward surprises of heel-trapping cracks, loose nails and broken boards, to the smooth, hard, level cement. At first the rut-lovers wailed. But who would now go back to uneven board walks or the pleasant uncertain earth paths? In foreign lands where the cement walk is unknown, who does not pray long and loud for its revelation to all the world?

Perhaps the earth floor is the ideal thing, but we have passed that stage, and in the evolution of house-building the wood floor is finding a rival. Wood floors above ground without a basement are unhealthful. There is always a musty odor from the poisonous fungus growing on the wood and on the ground. The ground underneath an old house is poisoned to such an extent that plants will not grow in it. The soil from under a cement sidewalk is very fertile.

Most concrete floors have not yet been developed beyond the sidewalk stage. If half the thought and time and money had been expended on perfecting the concrete floor that has been spent on developing wood from the rough board sidewalk to fine parquetry flooring, everybody would want the concrete.

To overcome the popular prejudice against concrete floors is the business of the architect. There are certain definite conditions to be observed in the laying of concrete floors. They are fundamental and in their strict observance lies the answer to the charge of the physical discomfort of concrete. After practical objections are overcome, attention may be given to esthetic considerations.

Concrete floors are usually laid free from the ground, with a dead air space underneath. In most of my houses the concrete floors are laid directly on the ground, doing away with air circulation under the floor and giving a more equable temperature. They are raised at least twenty-one inches above the surrounding ground, and particular attention paid to the preparation of the earth bed. After the foundation is laid the ground is puddled and tamped until very firm. Over the surface is spread from four to six inches of sand or sandy loam. Then the concrete is put on. If one part of the floor is below grade, the ground under it is carefully drained, after which the layer of sand prevents moisture from coming through.

The main body of rough concrete should be reinforced to one-third of one per cent. to prevent cracking, and scored to give a key to the top coat

*Abstract from an article in Sunset Magazine.

and prevent its loosening from the bottom. The finish coat should be reinforced with No. 18 gauge half-inch mesh galvanized wire to prevent cracking.

From four to six weeks should be allowed for cement floors to dry. During this time there is a continuous process of absorption and radiation of heat until a mean temperature has been reached, after which the temperature of the floor is more equable than that of wood.

To cover a cement floor with wood is about as logical as to cover cement sidewalks with boards. Everybody who has lived on cement floors laid according to the given specifications has been wholly converted to them and would never again be bothered with the care and trials of wood floors. It is not, of course, expected that concrete floors should be left bare. They should be partly covered with rugs, the same as a polished wood floor. Incidentally, when properly laid, waxed and polished, cement floors are ideal for dancing.

When troweled and finished to a gloss, cement floors do not mar or scratch. They should not be scored or marked off into squares or designs. The natural crazing of the top coat is far more pleasing. I have found no cement floor paint that produces a good effect. The hard monotonous flat colors are unpleasing, the paint soon wears off and shows the cement. Instead of using paint, I mix color with the cement, usually tones of red and yellow, red and brown or yellow and brown slightly mottled. Tempered by the gray of the cement, these colors produce neutral tones that are a splendid background for rugs and furniture. When quite dry, the cement should be cleaned with a weak solution of ammonia and water, given two coats of Chinese nut oil to bring out the color, then finished with a filler and waxed like hardwood. Well done, this treatment gives an effect of old Spanish leather.

It is quite as impossible to tell how to lay and finish a cement floor to bring out all its potential beauty as it is to give exact rules for the painting of a picture. Specifications and instructions carry one just so far, but beyond that point each builder must study out the problem for himself. It takes the knack or the inspiration or the gift—whatever its name—that differentiates craftsmanship from mere mechanical perfection, that raises the artist above the artisan, to make a cement floor the thing of beauty it can and should be.

Before it has set, cement is a wonderfully plastic material, more wonderful than clay. It can be colored, modeled, shaded, surfaced, and then of itself hardens into an everlasting expression of the workman.

The protest against ordinary cement floors is the unconscious demand for the thing well done. At heart we are never satisfied with any work that is not done right, and cement floors will not come into their own until architect and workman study them as an art.

The cement floors in the home of Homer Laughlin, in Los Angeles, forecast the possibilities of the future. Sprawling there, his soul in his work, with great sweeps of his trowel an artist wrought in that plastic, responsive material, blending the colors marvelously in the broad central spaces, coaxing them to a rare harmony of tone and exquisite finish, and around the outer edges he carved in low relief the lines of acanthus and other simple conventionalized leaf forms. In the entrance hall, with big free strokes he limned the feather-like fronds of a palm, using his color with consummate skill and an artist's feeling. The appeal of this most modern manifestation of ceramic art is far more subtle than that of the mosaics, which

were the acme of floor-making among the Greeks and Romans, and it has the singular advantage of being within reach of beauty lovers of moderate means.

Concrete floors are cheaper than wood for the first story; they are enduring, they require a minimum of care, they are comfortable and healthful when laid right, and they can be more beautiful than any other floor.

* * *

How the Contractor Can Advertise and Get Results

"How can a general contractor advertise?"

Which, of course, means how can he obtain the right kind of publicity; the kind that will do more than fill advertising space and cost money—in a word, the kind that pulls?

The principles of advertising are the same whether you are endeavoring to sell books, bricks, or office buildings or seeking to get your name on the architects' lists. The only things that change are the manner and methods of publicity. A general contractor must therefore adopt methods suitable to his own particular business, which, by the way, is decidedly different from any other type of business, and must have its advertising done and copy written by men who understand, in a most comprehensive manner, the details and intricacies of the building trade.

Then, again, the advertising must be of a twofold nature, inasmuch as its appeal must reach both architects and owners—two different types of men, and in most cases with very little in common so far as their training is concerned.

To the architect, the builder's advertisement must appeal with such riveting force as to be ever before him. If not in a physical manner, at least mentally it must make a little dent in his mind and "ring the bell" at the psychological moment when the architect is making up his list of bidders, and the nearer the top of the list the better his chance of always being among the favored few.

You (Mr. Builder) may say that you already do enough estimating and are now working overtime trying to land jobs. Are you on the lists of all of the prominent architects, the men for whom you would like to estimate? Are you in a position to select the good prospects and avoid the poor ones? In a word, are you competing against men who do the same caliber of work that you are doing, or are you forced out of your class because you are not on the chosen lists? If you cannot answer these questions to your entire satisfaction, then you are ready for serious thought on the question of advertising.—Exchange.

* * *

Theater and Office Building

The fine business corner at Market and Fourth streets, San Francisco, has been sold by John D. Spreckels to a syndicate of San Francisco capitalists, who have announced their intention of building a theater on the site. Messrs. Cunningham & Politeo will prepare the plans, but whether the building will be designed exclusively for amusement purposes or will combine a playhouse and office building has not been determined.

GRAMMAR SCHOOL BUILDING, ROSEMONT, PA.
D. KNICKERBACKER BOYD, JOHN L. CONEYS AND VICTOR D. ABEL, ARCHITECTS

A One-Story Schoolhouse*

THE new grammar school at Garrett Hill, Rosemont, Pa., marks an epoch in suburban school development. The structure has been designed on the unit principle so as to meet most readily the needs for increased educational facilities which will arise from time to time. To best accomplish this purpose, the one-story unit type was decided upon after a thorough study had been made by the architects, Messrs. D. Knickerbacker Boyd, John L. Coneys and Victor D. Abel. This type of building is arranged so that one classroom may be added at a time, if desired, or larger units may be constructed. The building is of the most flexible possible type and is capable of indefinite expansion.

The portions of the building now in use contain four classrooms, a well lighted manual training room, a domestic science room and play rooms. There are also service rooms in the shape of toilets, store rooms and retiring rooms for the teachers. A feature of the plan which deserves especial attention is the wide, well lighted corridor, which has been designed not only as a means of circulation between classes and exits but which is intended for use in the summer time for open-air classes and for other general school requirements.

The physical activities of the school have been especially provided for in the basement. A shower room, special toilets and a tub bath have been provided for the use of the pupils who will engage in athletics. A special entrance has been arranged so that the baths may be entered directly from the athletic field. It is proposed to use the field for community purposes and a separate entrance will make possible the use of the basement for dressing rooms without opening the balance of the building.

The accompanying illustrations show two possible plans for the development of the building. In each the ultimate structure will be in the form of a hollow square, on the inner side of which will be continuous lighted corridors. These corridors will resemble a cloister in every detail except for the enclosing sash. The court may even be left open so as to form an open-air playground or open-air auditorium. It may also be roofed over for assembly and auditorium purposes.

The features of the building have been provided for the double purpose of affording the broadest educational opportunities to the children and also for making the school a recreation and social center. The school board has been far-sighted in purchasing a large tract of ground so that several acres are devoted to play purposes. These will be open for the general community at special times to be arranged by the school board.

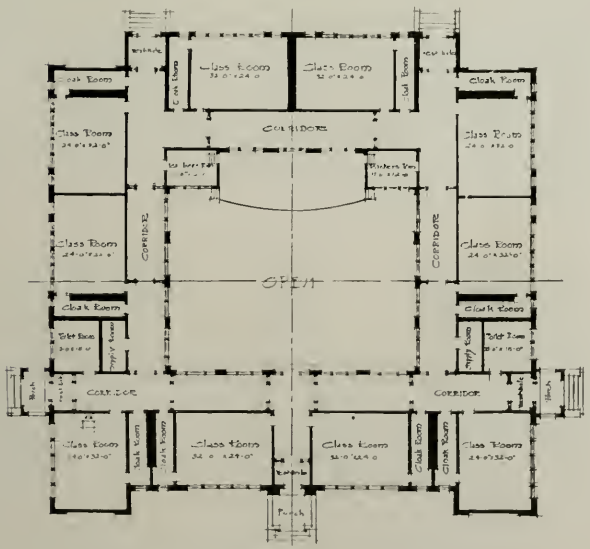
While flexibility for future extension was the deciding factor in favor of the one-story type, many other considerations prompted its adoption.

The first consideration was naturally the safety to life and limb, which is insured by having all classrooms and toilets on the ground floor with a separate exit for each classroom. A glance at the illustrations will show how completely the menace of fire and panic has been removed.

With but one story there are no stairs to climb several times a day as is the case when some classrooms are on the second story. From an administrative standpoint, and in the dismissal of classes, etc., the one-story form of structure is admitted to be vastly superior to the two-story building. All interior walls and partitions are of brick and hollow tile construction. Even the outside walls are lined with the latter material, doing away entirely with wood lath or wood in the building except in the roof itself, below which are suspended metal constructed ceilings.

*Reprinted by courtesy of the architects and the School Board Journal.

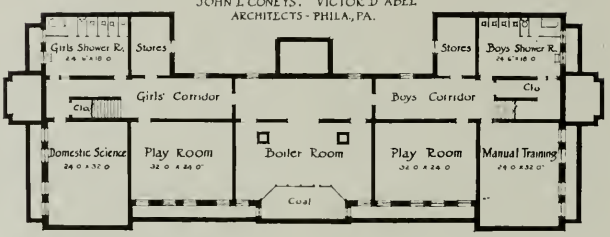
CORRIDOR, GRAMMAR SCHOOL BUILDING, ROSEMONT, PA.



SCHEME FOR DEVELOPMENT OF ROSEMONT SCHOOL

GRAMMAR SCHOOL BUILDING
for the
SCHOOL DISTRICT OF THE TOWNSHIP OF RADNOR
ROSEMONT-PENNA

D. KNICKERBACKER BOYD F.A.I.A.
JOHN L. CONEYS. VICTOR D. ABEL
ARCHITECTS - PHILA., PA.

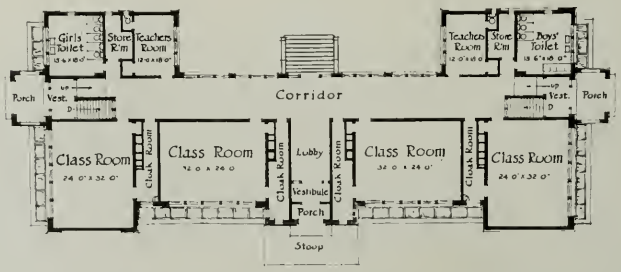


BASEMENT FLOOR PLAN, PRESENT BUILDING

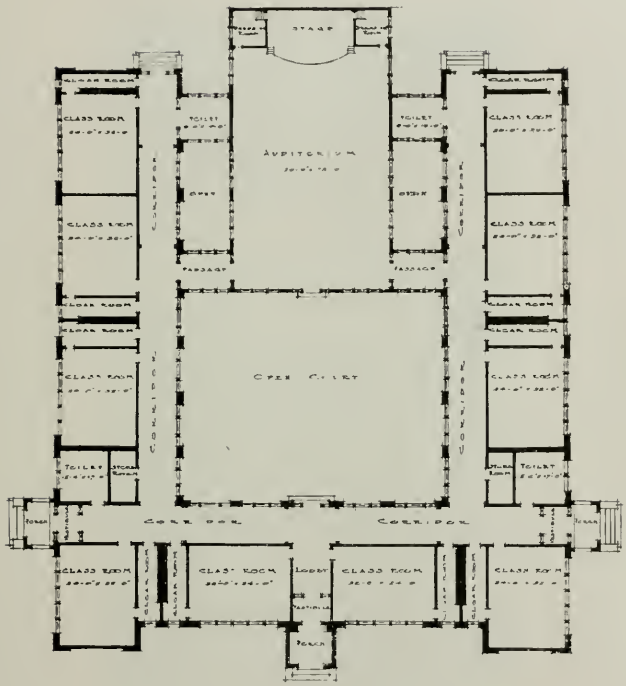
Individual bubbling fountains with wash basins have been placed in the cloak room connected with each classroom, and fire hose equipment has been fully installed as a precautionary measure. The building is heated and ventilated by warmed fresh air, aided by direct steam.

The materials of construction are, aside from the fireproof floors and walls described, granite base with brick above to the cornice, above which rises a green slate roof. The windows are disposed along the one side of each classroom providing "unilateral" light.

The corridors and toilets have red, blocked cement floors with metal baseboards. The entire building is fitted with a vacuum cleaning outfit; it is brilliantly illuminated and fitted with all devices to make it a model from the standpoint of health and hygiene, and to make it a community center as well as an educational center.



FIRST FLOOR PLAN, PRESENT BUILDING, ROSEMONT SCHOOL

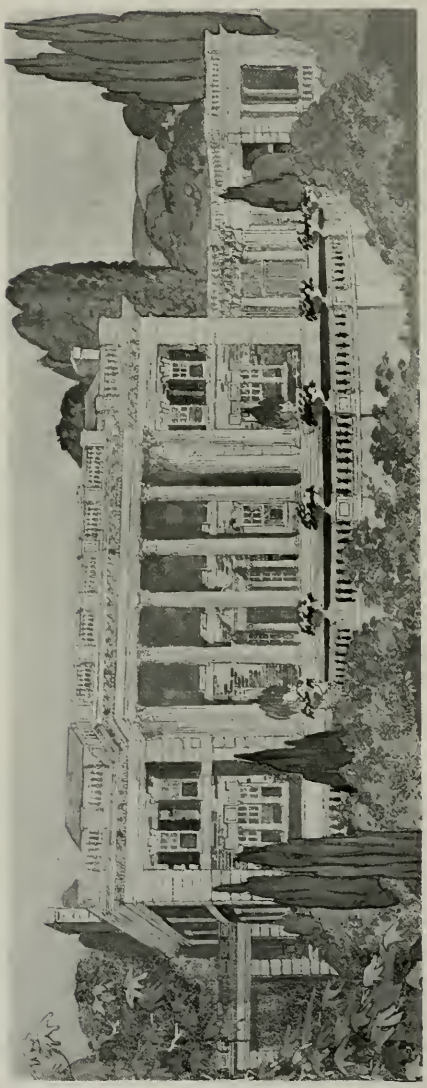


SKETCH PLAN OF A
COMPLETE CITY STORY-BUILDING
Scale 1/8 = One Foot

SCHEME FOR COMPLETE DEVELOPMENT OF ROSEMONT SCHOOL

Fussiness in Architecture

A great vice that is creeping into American architecture of interiors today is an exaggeration of tiny details. Moldings are multiplied until they become liney and disturbing. Every little plain surface is paneled in most tiresome fashion. It is as if draftsmen had come to hate a white spot on a piece of paper or a blank space on a wall and to feel obliged to cover every bit of their drawings with something, preferably mere lines. As a result the architecture as executed is endlessly tricked out, fussy and finicky—mere virtuosity.—Architectural Record.



RESIDENCE OF ROLAND P. BISHOP, BEVERLY HILLS
W. J. DODD, ARCHITECT

The Architect and the Public*

By WILLIAM L. STEELE, President of Iowa Chapter, A. I. A.

IT is a common expression that the people get what they pay for. It is a saying, also, that the people love to be humbugged. It is at least a fact that the people are often humbugged and misled by those to whom they look for guidance, by those who teach, by those who preach. It was said of old, "Beware of false prophets, who come to you in sheep's clothing, but inwardly they are ravening wolves." When the people go to a false prophet and pay him for his false prophecies, are they indulging their love of being humbugged, and therefore getting what they pay for, or is it true that both of our old saws are really false,—spurious money minted by the father of lies?

I believe that no one in his right senses likes to be deceived. Granted that this is so, we touch another bromide button, and the first suggestion is usually "There ought to be a law to prevent it."

At every assembly or legislature in every state in this great Union of ours, a multitude of laws are enacted at every session. The legal precedents are no sooner established by the courts for one set of laws when the next batch upsets them. It makes it interesting all the time for the legal profession. I heard a prominent Pennsylvania attorney once say, when asked about a point at law, "I do not know. Our last legislature passed some new laws which will have to be tested out in the courts before we can say with any degree of certainty how we stand in this matter." And he took up a bound volume containing the laws passed by the said last legislature, patted it on the cover, and said, "Our legal joke-book!" That was almost twenty years ago, and the same thing has been going on ever since.

The great American people are almost always the supposed beneficiaries of every law that is passed. The "public welfare," "public health," "public safety," "public interest," are all shibboleths of well-worn but tough fiber. It would seem that the people ought to know what is good for them in a democracy such as ours, but we find them strangely indifferent as a rule. They are too busy trying to earn their daily bread to bother their heads much about what goes on in legislature or in court, and so some say that democracy has failed. Others that it has not failed but must have its checks and balances, and the self-chosen ones must go ahead and run things. Out of courtesy and respect for the good old Constitution the dear people are still to be allowed to walk up to the ballot-box and confirm our previously outlined schemes, and ratify the preliminary wire-pulling.

In an ideal democratic condition the people as a whole ought to be found dictating the terms under which any business or profession or vocation or means of earning a livelihood should be undertaken and carried on. Considering the actual conditions and not theories, we find at once that this is not so.

There is a mistaken feeling of too much respect in the average mind for the mind of exceptional brain-power.

The professional walks of life are held to be beyond the ken of ordinary mortals. So that the result is that when a profession waxes strong and powerful it can get just about as much legislation for itself as it wants. If a profession is not so strong, or indeed if it be in the "twilight zone" and of a nature which, to the average mind, is not "professional" at all, it is "up against it" if its members want to exert influence in legislative halls.

*Journal of The American Institute of Architects.

Let us face the facts fairly. Most of us are agreed that the practice of architecture should be regulated, to some extent at least, by law. It is so regulated in some of our states;—in most of the states not at all. What are *our* motives?

The claim is made that the public safety demands it. That the incompetent should be prevented from practising architecture because they will design buildings that are unsafe, unsanitary, unscientific. The claim is made that lawyers and doctors have to be licensed, and that architects also should be so licensed as members of an equally elevated and honorable profession. The claim is made that there is the same need of licensing architects as there is need of licensing lawyers and doctors.

In Illinois the architects have their law, and I think they have proved that its existence has been beneficial not only to the public but to themselves. Is it not true that the value of such legislation is of great direct benefit to the members of the profession or calling affected? Is it not true that these members so affected are expected to prove by their way of doing their work that their chief motive was not their own self-advancement? Are they not expected also to prove that their interest in the protection of the public was not secondary?

The great engineering fraternity has pitched upon the state of Illinois as a strategic point in which to obtain similar privileges for itself. Its members also are burning with zeal to protect the dear people. As a profession they are doing the big things in constructive work today. They are damming the Mississippi at Keokuk, harnessing Niagara Falls, breaking through the Continental Divide to let the Atlantic and Pacific flow together. They are designing automobiles, submarines, aëroplanes. They are reorganizing factories, appraising railroads, putting any kind of a "going concern" on an "efficiency" basis. Nothing is too large for them or too small. They are designing buildings. Their estimates of cost work out. They are great on details, steel, reinforcing, elevators, conveyors, refrigeration, heat, light, power! We cannot do without them.

And how, pray tell me, can the architect hold the position, if he ever really had it, of being the recognized generalissimo and high-cockalorum of everything that pertains to building, unless he can get a strangle hold on every legislature in every state, and teach these upstart engineers to know their place?

Most of us, I take it, are graduates from one or another of our colleges of architecture, God bless them! But nearly all of them were, and still are, mere appendages to a greater and far more puissant college of engineering. Is there not a screw loose here? How well we remember the lordly air with which our engineering fellow students discussed the mysteries of calculus in our presence. How much they enjoyed the imputation that we of the architectural bar-sinister had elected our course because it was easier than theirs. How well we remember the way the "Fine Arts" were tagged and set aside and feminized! How little we understood—do we yet understand—that art is the breath of life? How can we have architecture unless there be architects to breathe into construction a living soul? How can the wonderful creative faculty, which ought to be the birthright of every architect, be taught in any school which is a mere subscript to the great Behemoth of modern commercialized engineering?

I do not want to be misunderstood. I do believe that, whether the public knows it or not, the practice of architecture and the practice of engineering are both professional, and both ought to be regulated by law. I have come to believe that such regulation is bound to be more or less ineffectual unless

the standards of building practice are fixed by a uniform building code. You can test a man's ability, but you have to follow him up in a direct and unevadable way.

"By their fruits ye shall know them," and that means in this case that if you have a code and honest, competent inspection, you can tell at once whether the designer of a building knows his business or not.

As to the supremacy of the great profession of architecture as compared with law or medicine or engineering, I would not be concerned save in one way. The architect will never be supreme by law. He must have the appreciation of the great dignity of his calling. He must have the deepest sense of realization of the responsibility that attaches to it. He must labor "in season and out of season" to make himself more capable, more worthy, more serviceable. He must sit at the feet of the heroes and learn "not hero-worship, but what the heroes themselves worshiped." He must become great, not as the sleek beneficiary of special privilege, but as the worker spending himself in service, and the last limit of service. He must be free from any taint of selfishness or graft or dishonesty or bluffing or brain-sucking. If he does not want to be exposed as a hollow sham in public places, let him beware how he lets a big heating firm's engineer figure out his radiation for him—gratis—or a big steel mill's engineer figure out his construction for him—gratis, or any other kind of a specialist do anything for him—gratis! Let him gladly, in the bigness of admitting that he can't know everything, make use of any and every kind of a specialist that walks; but, in God's name, let him pay for it. We hold that the owner should pay for special services of this kind, but how often does he? I maintain that if an architect is employed, and paid his fee to see that all these things are done properly, the architect ought to pay for the information he himself does not have. Only so can we hold our ground against the "specialists" who now, grown tired of playing their little second fiddles, are invading the architect's territory and taking entire commissions to execute.

How else would it be possible for a man formerly on the payroll of a bank-vault concern to go out as a bank engineer, and get commissions to design and build not only a vault, but the building that is to receive the vault, and its fitments down to the forty-nine brass cuspidors? How is the public going to judge? How can you stop it by law if the fellow is smart enough to pass his examination? We must educate the people. Ah, yes! but, my friends, in the last analysis there is only one way, and that is the long, hard and weary way of practising what we preach.

A certain man used to be employed as a draughtsman in quite a prominent office in Chicago. He is now a specialist and a breezy writer for the various architectural and near-architectural journals. He is considered a sort of guide-post by some people in all matters architectural. He loves to tell the public how incompetent is the average practising architect. He advertises by letter to architects and owners—with this difference: To the architect he says, "Why hire draughtsmen? Send me your rough sketches and I, with my corps of trained experts, will get up the drawings and specifications for you. Or, if you haven't any need of such exalted services, let me at least make your perspectives." To the owner he says, "Your architect is probably well enough in his way, but he needs guidance. Let me be your consultant to check the other fellow up so that you may be sure he is right before you get stung."

To make the following instance clear, let me call this man Pecksniff. I was sent a sample copy, the other day, of an architectural magazine published in a far part of the world. It contained a very good article by Pecksniff on

some of the inconsistencies of traditional methods of design, and as illustration there was a picture entitled, "A City Hall in U. S. A., designed by Pecksniff." A day or two later I received from Pecksniff a letter containing his advertising matter. Among the half-tones enclosed therein was this same picture, but at the bottom was reproduced the name of a firm of architects in one of our principal cities! The inference was that these misguided gentlemen had employed Pecksniff to make this perspective for them. He evidently thought well enough of it to appropriate it as his own for his far-away article. It is possible that he would say, "These pseudo-architects employed me to design it for them." But even so, to what depths of professional indecency are we come when we contemplate a mess like that!

There is a question that at once occurs to the practical man who is worn to a frazzle finding ways and means for keeping his establishment going during a period of hard times, and that is the relation of the architect's compensation to his standards of practice. I was very much impressed by the paper presented to the American Association of Engineers here in Chicago last month by Prof. F. H. Newell, of the University of Illinois. He says:

"What do we mean when we claim that the highest function of the engineer and his greatest reward are found in effective service? The word conveys the idea of help rendered to another, not as a favor involving an obligation, nor on the other hand as a matter of self-sacrifice. It is something that may be expected though it cannot be demanded, and may be performed among equals. Service consists of those acts that tend to lessen trouble or increase the health, prosperity and convenience of others.

"Engineers in performing service are by this very fact entitled to full recognition. Service implies a suitable reward, and while the effort may be altruistic, it does not involve unnecessary self-denial. A proper remuneration—one assuring a good living—is due to the engineer. He that performs service rightfully does it with full expectation of reward, directly or indirectly, in the satisfaction of duty well done."

This applies, word for word, to the architect, and the public is going to judge our worthiness of a proper remuneration first by our own self-respect and our own estimate of the worth of our services, and second, by our fulfillment of our professional obligations, by the comparison of our service rendered with our service promised.

I do not favor "unionesque" methods of enforcing an established fee, but I see no hope for the future of architectural practice unless we succeed in educating ourselves to the full knowledge of what our proper service to the public ought to be, and what it costs to render such service. In the light of such knowledge we would be able to say "no!" when opportunity presents itself for getting a commission away from some brother architect by price-cutting. Price-cutting inevitably results in lowered standards of practice, and very often in dishonest methods of practice.

Professor Newell makes a strong appeal for the widening of the field of practice. It is equally true, in the practice of architecture, that the architect should be "a man of vision—a missionary of light and progress." It is equally true that in his work the architect is far ahead of the public. He has not taken the public into his confidence and explained in simple terms, in ways that would attract the public, the results already achieved. The city-planning movement is a great field for the architect, and the engineers are seizing the opportunity and are now on the way toward occupying by far the most commanding place in the public vision where any matter of civic improvement is concerned.

Professor Newell points out the problem resulting from the new men who come into the professions each year from the schools. His optimistic belief is—and I think it is the true one—that "the overcrowding is more apparent than real. A relief is to be obtained, not by limiting the influx of men, but rather by widening the field of service." I believe we should welcome into the practice of architecture every young man who has the necessary equipment and the proper ideals. But I think we should be in a position to say to the schools: "You must not expect us to make room for half-baked, immature, young smart-alecks. You must not expect us to find a place for the typical graduate as he comes forth today with only a four years' veneer of architectural odds and ends covering his lack of ideals, his starved and all but dead imagination. We ought to know what is going on in the schools. We ought to help sustain the child as he passes from the primary grades into high school, and see to it that his means of self-expression are cultivated and not suppressed. We cannot blame the architectural schools when we come to realize how little real material they have with which to work. Let the public be taught how well worth while it would be to improve the training of its special students. At present the public is satisfied if its local high school is on the accredited list of a respectable number of colleges and universities. It does not seem to occur to check up the graduates of the high school and see how many of them ever amount to anything.

As to the appreciation of the value of architecture by the public, I think again with Professor Newell that there is a certain salesmanship which the architect as well as the engineer should cultivate. I will quote from his paper:

"We recognize that the success of many a merchant is due to a peculiar art that he has acquired, and one that enables him to sell goods at a profit. We have more slowly come to recognize the fact that his success is due not to the fact that he personally makes a profit, but that the other party, the world to whom he sells, is benefited. For a time a merchant may sell inferior goods and make money; but an established business can rest secure only on honest advertising and on the realization by the public that he is performing a real service to mankind.

"In the same way, the engineer, to succeed, must acquire the art of salesmanship. He may not recognize or label the quality, and may even deny its existence. He may point to a code of ethics rigidly observed against advertising, or self-exploitation, and yet he may possess to a high degree the real art of presenting his ware in such a way as to convince the world that its general welfare is promoted by purchasing from him."

Lest it may seem that this is all foreign to my subject, let me urge that the public is and ought to be concerned in all manifestations of architecture "as she is practised." Let me urge that while laws are needed, that what is still more needful is that the ancient fire of genuine love for humanity and love of labor be kept burning. For, say what we please, Art is the flame that flickers above this sacred fire. Any other fuel will produce only smoke. I make confession to you of a deep and abiding faith that whether we as individuals prosper or fail, whether we survive or perish, this beloved country of ours will bring forth an architecture that will live and endure long after our law books have moldered away. I confess to you my belief that if we are to have a creditable share in that most enduring of all records of a nation's life, we must *be* architects to the uttermost stretch of every fiber that is in us. We must endeavor to interpret the spirit of our age and people, not as geniuses, not as originators, not as copyists, not as romanticists, not as mystics, not as academicians, but as *men*—sincere in every self-expression, loving truth and that most dear goddess, our liberty.

Kidder's Handbook (Revised Edition 1916) Describes the Quantity System

AMONG the many new features in the latest edition of Kidder's Handbook, revised by Professor Thomas Nolan, F. A. I. A., of the University of Pennsylvania as editor in chief, we notice an excellent description of the Quantity System and its practical application to contract work. The publishers therefore take the liberty of quoting the article with due appreciation and acknowledgment to the proprietors of Kidder's, a work we can cordially recommend as deserving of a place upon the desk of every architect and contractor in the United States:

The Quantity System of Estimating.*

Explanation of the System. The Quantity System is not, as some persons have supposed, merely the taking off of a list of items by one person for some other person's use. It means the careful measurement by a disinterested expert specially trained in this kind of work, that is, a Quantity Surveyor. This specialist proceeds in a manner different from that of the average contractor. He follows certain recognized rules in taking off quantities, abstracting and billing, with a view to eliminating errors. He uses also certain uniform standards of measurements and expressions. His checking and rechecking methods to ensure accuracy must be studied to be appreciated by those to whom the quantity system is unknown. A record is made of every item, however small, having a money-value. These items are classified and arranged, each under its proper trade or department, in methodical order. Guess-work methods are unknown to the quantity surveyor, while his accuracy and attention to even small details is worthy of comment. Every bidder figures from a copy of the surveyor's quantities furnished to each one, with the plans and specifications, free of cost. The surveyor who does this work is a professional man similar to the engineer or the architect. He should, in fact, have, and he usually has had, experience in these professions, and in addition, a practical experience acquired in the field in actual, close superintendence of construction-work.

Method of Procedure. Such a surveyor, in taking off quantities from an architect's or engineer's drawings, readily detects any ambiguities or discrepancies, due to hasty preparation or other cause. The attention of the architect or engineer is at once called to such matters by the quantity surveyor, as he goes on with his work. Detected in this way, such uncertainties are at once corrected and adjusted, so that by the time the drawings and specifications reach the bidders for estimating purposes, everything has been made plain and accurate and the possibility of error in quantities can be practically disregarded. The resulting document, prepared exclusively in the surveyor's office, is then printed or similarly reproduced, and a facsimile supplied free of cost to each bidder, who inserts his unit price opposite each item, and readily foots up the money-cost in dollars and cents. This is really all that he should be expected to do for nothing. The quantities of materials and labor then set forth in this document, or Bill of Quantities, should state everything the contractor is called upon to perform or furnish, in order to complete his contract. In short, the bid becomes a proposal to do a certain fixed quantity of work, no more and no less. This, then, briefly, is the main underlying principle of the Quantity System of Estimating: a definite quantity of work for a definite price, and the entire elimination of conditions which now compel bidders to take chances, and cause all parties, the owners included, to suffer in the end.

The Present Unsatisfactory Conditions. Most architects are familiar with the wasteful, unsatisfactory methods followed today. They injure both parties to a contract because of bidders' mistakes in figuring, as accuracy is so often sacrificed for so-called speed. While wonderful strides in methods of construction and in materials have been made, no atten-

*The Quantity System of estimating has been systematically advocated since 1891. It has attracted much attention among contractors, architects and engineers as a direct result of the long-continued activity of those who recommend it. In course of time this system of estimating must be adopted, as it stands for a square deal between owner and contractor. The movement in aid of this work is purely a voluntary one, an honest effort to bring about a betterment of the existing conditions in estimating and contracting. The founder of the movement in the United States is Mr. G. Alexander Wright, a member of the San Francisco Chapter of the American Institute of Architects.

tion has been given to standardizing methods of estimating. In the end, of course, it is the owner who suffers. There are, however, as a result of the movement initiated in San Francisco in 1891, indications that more conservatism and a closer adherence to business principles are going to be preferred by the moneyed interests, in place of the guess-work which has prevailed in the past. Architects or engineers who permit an unduly low bidder to take a contract are certainly courting trouble.

Use of the System in Other Countries. The principle of measure and value, or payment by measurement, usually designated as the Quantity System, is based upon equity and square dealing. On large work it is used in England, Ireland, Scotland, France, Germany, Australia and South Africa, and it is a significant fact, that in no instance in which this system has been once established, has it ever been abandoned for the former haphazard methods.

Advantages Claimed. The advocates of the quantity system in the United States claim for it the following advantages:

(1) The enormous saving of time and money now wasted by numerous bidders, all doing the same thing and going over the same ground.

(2) Safer bids, as the volume of work to be performed is clearly indicated by the bill of quantities, which is the essence of the contract.

(3) No expense to the bidder, the owner paying for his own quantities knowingly, and he and the contractor both receiving the benefit. The owner pays now, but this fact is not emphasized or brought to his attention, and so he does not know it. The percentage added to a bidder's net cost is not all profit, a certain portion being absorbed in overhead charges, which, of course, are ultimately paid by the owner.

(4) Saving of disputes arising from extra claims, which are often made because of the vagueness of the drawings, and of omissions or other errors in the specifications.

(5) Better opportunities for the careful, competent bidder. With the Quantity System the bidders all work up from the same basis. The incompetent bidder cannot omit or forget items, and so take work away from more careful or more competent bidders.

(6) Better work and greater harmony, for the reason that if no part of the work is omitted there is less temptation to that letting up on the work which usually results in dissatisfaction, if not in friction, or worse.

(7) Misunderstandings are reduced to a minimum. The bill of quantities is the interpreter of what is intended, a sort of clearing-house for the drawings and specifications.

(8) Neither party to the contract can obtain any advantage over the other on quantity or description of work.

(9) No disputes with sub-bidders, it being clearly stated what each trade is to furnish.

(10) Contractors, having much less figuring to do, can devote more time and give more attention to buildings in hand, and especially to supervising and directing their subcontractors, a condition much desired at present.

(11) Less liability of owners and architects to have inferior contractors as the lowest bidders.

(12) Fewer extras, which are usually a trouble to all concerned. Should there be any, however, they can be more easily adjusted if the schedule prices govern in such a case.

(13) The architect or engineer, if he so desires, has the advantage of collaboration with the professional Quantity Surveyor, who is available, also, when preliminary figures are required. This information is now often furnished by the contractors, thus creating an undesirable obligation.

(14) No change or reorganizing of architects' or engineers' offices is necessary, and much detail work, now involved in the taking off of figures, would be taken care of in the Quantity Surveyor's office.

(15) When the contracts are signed, the drawings and specifications will have been previously made as complete as possible, thereby avoiding subsequent inconvenience to the contractor and his foreman on the job, and largely doing away with inquiries at the architect's offices by contractors during the progress of the work.

Adaptation to American Practice. In the United States any such system must conform to American needs and sentiment, and be a practical system. For many reasons it would be undesirable to accept the English practice in either of its forms. The great principles it stands for can, however, be accepted and applied with great advantage.

More Anent That Freak Bid at Iowa City

FOLLOWING are editorials on the winning bid at the letting of a concrete bridge in Iowa City, Ia., when a contractor of that city submitted a figure of "$500 lower than the lowest." The bridge will cost about $80,000:

From the Davenport Democrat-Leader:

"We fear that Iowa City entered into an unprofitable bargain in more than one way when it let a contract for an $80,000 concrete bridge on what looks like a most irregular bid.

"The city has planned a handsome bridge over the Iowa river at Iowa avenue. It submitted the plans for the bridge to the contractors of the Middle West, and half a dozen responsible construction companies made estimates on them, prepared their bids, and sent representatives to Iowa City to present them in due form. With them there went to the Iowa City Council the bid of a local man, to the effect that he would build the bridge for $500 less than the lowest bid of the competing companies. The Council called this a bid, and has let the contract to him.

"Iowa City is taking big chances in this matter to save a paltry $500. The contracting business and all other business must have some foundation of recognized business practice to stand on. One has only to think through on the line suggested by this Iowa City bid to realize what confusion the whole business of the construction of public works would be thrown into if the policy of general recognition of such bids were followed. No reputable construction company would continue to employ experts and high-class estimators to figure on work if the contractor who cut out all this trouble and expense were to be allowed to carry off the work on an offer to take the contract at '$200 less' or '1 per cent off' the figures of the other fellow.

"Then there is the danger that the man with the lowest bid will find himself losing money and will slight his work, use poor materials, and cut a corner wherever he can. This danger is reduced to a minimum on straight bidding by responsible companies, with good financial backing and bonds. But once the field is thrown open to every man who is willing to take a job at a little less than the man who has already gone to large expense to make a careful estimate of it, and the danger is multiplied to prohibitive proportions.

"Certainly, the 'Iowa City plan' wouldn't do. If other cities follow Iowa City's example, nothing but confusion and regrets will follow."

Commenting further on the case, the Iowa City Citizen says:

"Some things may be said for the letting of the contract on the bid '$500 lower than the lowest bid.' The bidder was taking a chance that no other firm would make a mistake and bid below cost, and thus he was not wholly outside of the principle of competitive bidding. At Grinnell within recent years it is said one firm bid $60,000 too low on a contract, afterwards getting out of it on a technicality. If another contractor had put in a bid like the one here last week, he would have faced a heavy loss.

"Then, of course, the evidence is that Iowa City is getting the bridge at a reasonable price. Whatever may be said of the other firms, the one from Minneapolis was apparently here after the job, and bid lower than the engineer's estimate of the cost. With the steadily rising prices of material it is possible that a re-letting would not secure for the city as low a price. This bridge will cost more than the Burlington street bridge, built a year ago, in part because of the advance in materials. Further delay might have been expensive for the city.

"There is something also to be said for the view expressed by a member of the Council that if the local bid was a legal bid, the Council was bound by custom, if not by law, to accept it; if it was not a legal bid the Council was bound to reject it. It is stated that the paving law of Illinois provides that after bids are opened any contractor may offer to do the work for 10 per cent less than the lowest bid and take the contract. The object probably is to keep the highest bids within a 10 per cent profit, and the Illinois law seemingly recognizes the theory of the bid on which the Iowa City contract was let.

"Unless the Minneapolis company contests, we may not have a court decision on whether the bid was strictly legal, but it is the opinion expressed by one of the most competent engineering authorities in the Middle West that it was 'decidedly irregular.' Even under what is reported to be the Illinois law, the bidders know what they are bidding against, but in this case none of the outside firms had knowledge that such a bid would be offered and accepted.

"The chief disadvantage to Iowa City may be in the impression that it is useless for outside contractors to attempt to bid here on any public work. If such an impression becomes established among contracting firms over the country, we shall be dependent on local bidders hereafter. Should this be the case, any saving effected on this particular contract would be a small matter compared with the possibilities on future contracts. * * * *"

* * *

Contractor Offers Some Good Advice

Mr. Frank Gilbreth, the New York contractor, who built several large buildings in San Francisco after the big fire, has summarized his views on steel and concrete construction as follows:

1. A steel frame, properly painted and buried in masonry, will not rust enough in thirteen years to affect its strength any measurable amount.
2. The better the steel is coated with mortar, the less it will rust.
3. Portland cement is better than lime mortar for imbedding steel to prevent it from rusting.
4. Unpainted iron rods buried in mortar composed of lime and a large proportion of Portland cement rust very little, certainly not enough to impair their strength.
5. Columns should be of such cross section that they can be thoroughly imbedded in Portland cement, avoiding a hollow column unless latticed and filled with very soft concrete.
6. Wherever possible, preference should be given to those shapes of steel that present the least surface to the action of rust.
7. If steel is not thoroughly cleaned from rust before it is painted, the paint will not greatly retard the progress of the rust.
8. It is much easier to cover steel thoroughly with concrete than with brick masonry. If brick masonry is to be used, the bricklayer should thoroughly plaster the steel work ahead of the brick work.
9. The quality of the paint used, though important, is not so important as surrounding every part of the steel with Portland cement.
10. Interior columns do not rust as much as exterior columns.
11. Cinder concrete does not injure to the slightest degree a steel floor beam that has been painted.
12. No pipes or wires should ever be placed behind fireproofing, as they will buckle from the heat and push off the fireproofing.

A Word About Concrete Bridges

By ARTHUR SEDGWICK.

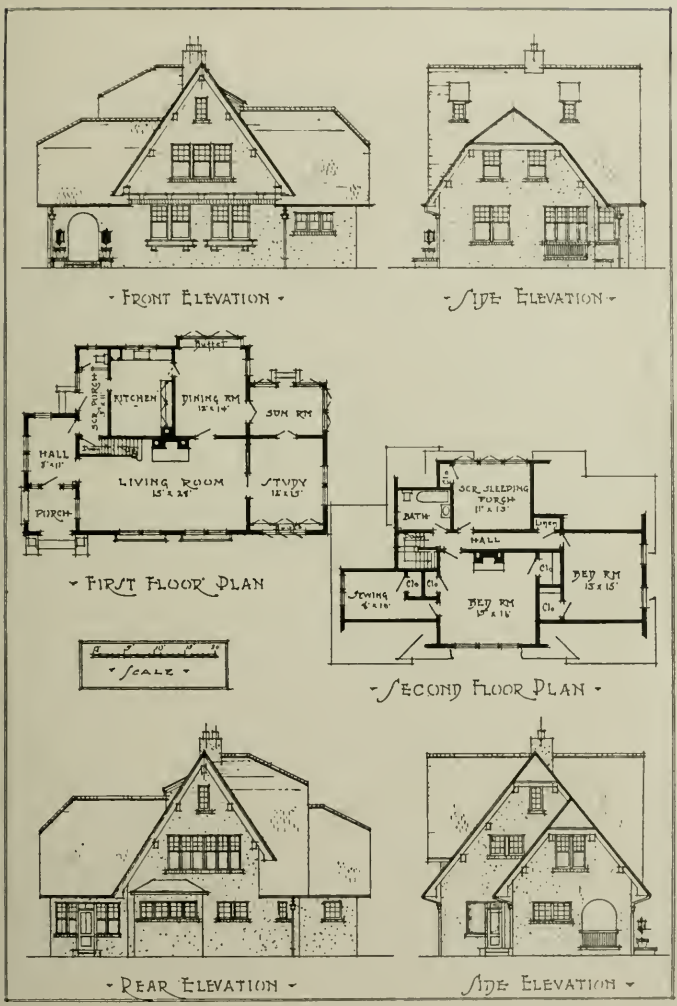
EFFICIENT construction will effect a great saving in the cost of all concrete work. The adaptability of concrete to the construction of culverts and short-span bridges is due to its permanency, simplicity of construction, and general availability and reasonableness of cost. Portland cement concrete is probably the most durable building material known today, a condition which is only realized, however, if the aggregates are properly mixed and the structure correctly designed and constructed. Ignorance and lack of experience in the past has led to bridges only lasting a portion of the time they were normally capable of. This condition ought not to exist today; mechanical skill of a high order is not necessary to design or construct a concrete structure, the form work is not difficult, neither are the precautions in mixing or laying the concrete. Yet unless the work is carried out under men experienced in it the results are often jeopardized.

The causes for poor outward appearance of so many of our bridges generally are: (1) lack of sympathy on the part of the community for something better; (2) failure on the part of the engineer or road superintendent to enforce the specifications; (3) lack of efficient inspection; (4) incompetence on the part of the contractor or foreman. Some of the common defects in country structures are: the structure is placed off the center line of the road, or not in line with it, broken corners and edges, distorted walls due to forms being loosely built and insecurely braced, trying to improve porous surfaces by the injudicious use of plaster. In addition to these unsightly effects, the following defects in methods and results which lead to a materially weakened structure as well as an unsightly one: the injudicious use of pit gravel, insufficient and poorly mixed cement, poorly supported forms, which allow the concrete to settle in setting and misplacement of steel reinforcement. To avoid these defects, a brilliant mind is not necessary, but they do require attention by a thoroughly experienced and common-sense foreman.

Wherever possible the forms should all be built and braced before laying any concrete. Many culverts and some bridges are spoiled or endangered by not having the foundation footings carried down deep enough. In sandy soils particularly, there is a danger of water undermining the structure. In spite of these the construction of a culvert should be an easy matter. In point of efficiency the built-on-the-field culvert is far superior to the ready-made variety. As compared to the circular section, a square or rectangular section has relatively higher water-carrying capacity at any height of water.

With the advent of the new and increased traffic, culverts and bridges should be built wide enough to accommodate future development. Small culverts up to six or eight feet in diameter should be built to allow for not less than a twenty-four-foot roadway. The increasing occurrence of accidents from motors colliding with handrails on narrow culverts makes it essential that in future they be built to the width mentioned.

The present practice of placing floors in steel highway bridges is to lay the stringers on top of the floor beams, uniting them lightly to the top flange; placing the concrete floor slab on these and relying on them to hold the stringers together and prevent toppling due to lateral forces and vibrations. The increased use of the motor truck will necessarily put much severer strains on the bridges and for future construction it is considered advisable to rivet the stringers to the webs of the floor-beams as is done in railway and building construction.



A COUNTRY RESIDENCE
DESIGNED BY F. E. WARNER

American Institute Canons of Ethics

(Reprinted by Request.)

THE following Canons are adopted by the American Institute of Architects as a general guide, yet the enumeration of particular duties should not be construed as a denial of the existence of others equally important although not specifically mentioned. It should also be noted that the several sections indicate offenses of greatly varying degrees of gravity.

It is unprofessional for an architect—

1. To engage directly or indirectly in any of the building trades.

2. To guarantee an estimate or contract by bond or otherwise.

3. To accept any commission of substantial service from a contractor or from any interested party other than the owner.

4. To advertise.

5. To take part in any competition which has not received the approval of the Institute or to continue to act as professional adviser after it has been determined that the program cannot be so drawn as to receive such approval.

6. To attempt in any way, except as a duly authorized competitor, to secure work for which a competition is in progress.

7. To attempt to influence, either directly or indirectly, the award of a competition in which he is a competitor.

8. To accept the commission to do the work for which a competition has been instituted if he has acted in an advisory capacity, either in drawing the program or in making the award.

9. To injure falsely or maliciously, directly or indirectly, the professional reputation, prospects or business of a fellow architect.

10. To undertake a commission while the claim for compensation, or damages, or both, of an architect previously employed and whose employment has been terminated remains unsatisfied, until such claim had been referred to arbitration or issue has been joined at law, or unless the architect previously employed neglects to press his claim legally.

11. To attempt to supplant a fellow architect after definite steps have been taken toward his employment, e. g., by submitting sketches for a project for which another architect has been authorized to submit sketches.

12. To compete knowingly with a fellow architect for employment on the basis of professional charges.

Architectural Terra Cotta with Reinforced Concrete

By EDWARD H. PUTNAM, of the Atlantic Terra Cotta Company, New York.

IN the construction of architectural terra cotta no hard and fast rules can be laid down. The material itself is so versatile and is adapted in so many different ways, that the methods of construction have to be flexible. Every different application and even every different contract must be especially considered, and the method of construction—the anchoring, bonding and jointing—must be determined in detail before manufacture begins.

It is logical that the manufacturer should make the construction drawings for the builders' guidance just as he makes his own working drawings. No one else understands architectural terra cotta so well, and in fact a great many builders who have used terra cotta frequently have but little conception of the factors that must be considered in its construction, simple as these factors are.

For this reason the manufacturer on every contract makes construction drawings that are complete down to the most minute detail. The drawings, of course, are in accordance with the architect's design, and are subject to the architect's approval, but the architects depend largely upon the judgment of manufacturers of recognized responsibility. Frequently the manufacturer's service includes the actual erection of the terra cotta. The best manufacturers are ready and more than willing to undertake the complete contract from the beginning until the terra cotta is set, and generally such a contract can be executed in less time and with greater economy than if the terra cotta is handled by the general contractor.

If the general contractor does handle it, however, he should engage a terra cotta fitter from the manufacturer. The better manufacturers have especially trained men for this service. One man can generally oversee all the terra cotta work on a building, and as this man not only superintends the terra cotta setting, but does a large part of it himself, he should naturally be on the general contractor's pay roll at the regular union wages.

In connection with reinforced concrete, architectural terra cotta is used in two ways, which may be roughly classed as the "decorative" and the "practical," though in the latter class the decorative and the practical are generally combined.

In the purely decorative form of construction the terra cotta is used for architectural trim; for entrances, windows, belt courses and perhaps for the cornice. Generally it is modeled and frequently brightly colored, for polychrome terra cotta is very effective against a gray background of concrete.

In the practical form the terra cotta is used as a complete veneer for the entire building, as a protection against fire and weather, and for greater cleanliness. As glazed terra cotta can be readily cleaned down with soap and water, and reflects the greatest amount of light, it is frequently used for interiors of bakeries, dairies and the engine rooms of power houses. Any decorative architectural treatment can be incorporated easily in this type.

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WHAT IS AN ENGINEER?

Aside from the jocular definitions of an engineer as a man out of a job, most attempts to define an engineer have been confined to a statement of his duties. Consequently the quantitative summation of those attributes that constitute a successful engineer, which has been compiled by the American Society of Civil Engineers' committee on engineering education, is at once novel and interesting. As it represents the composite opinion of fifteen hundred practicing engineers as to what are the essentials of a successful engineer, this rating also carries a certain measure of authority, says the Journal of Electricity, Power and Gas. The yard-stick for sizing up an engineer follows:

1. Character, including integrity, responsibility, resourcefulness, initiative 41.0
2. Judgment, including common sense, scientific attitude, perspective 17.5
3. Efficiency, including thoroughness, accuracy, industry.....14.5
4. Understanding of men, executive ability 14.0
   ——87.0
5. Knowledge of the fundamentals of engineering science 7.0
6. Technique of practice and of business 6.0
   ——13.0

The most noticeable feature of this rating is the low value of 13 per cent assigned to technical ability. Less than half of this, even, is credited to specialized technique. It is very evident that success in engineering, as in other walks of life, is measured not by what a man knows, but what he does with what he knows.

The factors in accomplishment, the doing of things, are character, judgment, efficiency and understanding of men, the same factors that govern success in any business. Any man characterized by these attributes would be successful in any field with whose rudiments he was familiar. Technical knowledge, whether of medicine, law, business, or what not, is secondary to the measure of the man. * * *

Technical schools seem to take themselves too seriously and the professors therein have a commendable tendency to assume too much responsibility for the type of men they graduate. Entirely too much credit is given to the four years of college life in distinguishing whether a man is an engineer or not.

Few men come under the category of successful engineers before they are thirty-two years of age. Only one-eighth of this time was spent in college, presumably in the acquisition of technical training, which is given a rating of one-eighth in defining an engineer. Seven-eighths of the time is available for qualifying under the other requirements which are given a seven-eighths rating. Of course a college education should build character, impart judgment, promote efficiency and bring an understanding of men. Just as much technical ability is acquired after graduation, but to attempt to crowd all these things into a four years' course is to attempt the impossible.

Character is merely a by-product of doing the nearest duty well, judgment comes from experience and involves a modicum of age; efficiency should be cultivated at all times, and understanding of men comes only after man's age has been reached. This does not imply that by the mere addition of age to a man he can "manage" better, but it does show that the period from eighteen to twenty-two years of age is not the only period which brings about the development of successful engineers.

A KITCHENETTE

We recently made the acquaintance of Kitchenette. Beforehand, we had only very vague ideas of what it was. Could it be a perfume or a talcum powder? Was it allied to the floral or the occult? There was hope in the sound of the word that it might be French and feminine. Was it a sister in some sort to mignonette or planchette or grisette?

A kitchenette, says House Beautiful, is simply a little kitchen, very compact, very convenient. When you sign the lease for your new apartment, you guarantee not to profane it with dogs or birds or babies, and in return you enjoy all the privileges and immunities of a kitchenette.

A kitchenette is about the size of a bath cabinet. It is extremely sanitary, having a ventilator through which the flies come down in swarms, and the floor and walls are covered with beautiful tiles that are much harder than the dishes that strike against them. Every time you get down the soup plates, you knock off a cup. Of course, in one sense, you are a gainer by this operation.

When we were a boy we put some neat little shelves into a cigar box. We thought at the time that we were making a cabinet for our choice collection of minerals; but we were really building shelves for a kitchenette. Under the shelves is a sink of the butler's pantry variety, but something was the matter with its thyroid gland. It never grew up. When you wash the dishes, it's well to wear a mackintosh, for you have to choose between an ineffective dribble and a spattering shower. Under the sink —believe it if you can—there is a refrigerator capable of holding a piece of ice of a trifle over two carats' weight. And on the opposite side—don't turn too quickly or you'll bark your elbow and bring down all our cooking utensils—we have a diminutive engine that dispenses sparks of the Promethean fire we purchase from the gas company.

Possibly the kitchenette is not exactly designed for a ceremonial dinner of seventeen courses, but for a simple breakfast for two persons it does very well.

"Where's the coffee-pot?"

"On the bathroom washstand."

"Where are the eggs?"

"On the bureau in the bedroom."

"Where's the bread for toasting?"

"How can you ask such an unnecessary question! The bread's where it always is at this stage of the ceremony—in the pocket of my dressing-gown."

Some day we are going to make a lot of money. We are going to invent a folding kitchenette on wheels. Then persons can cook their meals in the bedroom, serve them in the living-room, wash the dishes in the hall, and after everything is over, fold up the kitchenette and put it behind the clock.

Kitchenette is rather hard to classify. It's too large for a bangle, it's too small for a wrist watch.

Denver Architect Wins Court House Competition

The architectural competition for a $250,000 court house at Prescott, Ariz., was decided by the Supervisors of Yavapai county early in the month. W. S. Bowman of Denver was selected as architect of the building, his design being considered the best, although it is said the structure cannot be built for the sum available if his plans are followed to the letter. First prize of $1000 was awarded Norman R. Coulter of San Francisco and a second prize of $500 was given F. J. De Longchamps of Reno, Nev. Twenty-four architects participated in the competition.

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Primitive Architecture

An interesting meeting of the Southern California Academy of Science was held recently when Dr. George La Mont Cole gave an illustrated lecture showing his work of research in the Southwest during the past seventeen years. He showed the evolution of house building from the small cave appropriated by primitive man to the erection of a wall in front followed by cross walls dividing the cave into a dwelling of several rooms and on to the great community houses containing a thousand rooms or more.

The lofty sites, the architectural designs, the character of the workmanship, together with specimens of their industrial art as exhibited in their pottery and fabrics, reveal the fact, he said, that these people were not bunglers, but well advanced in the scale of what we call civilization. "Americans need not go abroad for here are ruins and monuments that rank well with any found in the old world," he added.

Winner of Oregon School Competition

An architectural competition was held recently for plans for a school building in Baker county, Ore., the structure to cost $125,000. Messrs. Lawrence and Holford of Portland were awarded the honors and have been commissioned to prepare the plans. The other competitors, all especially invited, were William H. Weeks of San Francisco, J. J. Donovan of Oakland, Flynn and Russ and W. D. Reed associated, of Oakland, Stephens and Stephens of Seatte, Whitehouse and Fauilhaux, Sutton and Whitney, M. P. White and A. E. Doyle of Portland. The jury was composed of Messrs. Folger Johnson, Carl F. Gould and J. A. Churchill. The professional adviser was Mr. F. A. Naramore.

More Single-Story Schools

The two new school houses planned by Jno. J. Donovan of Oakland for the city of San Leandro are considered by their designer to be the last word in one-story school house construction. They will be fire-proof and equipped with every possible device to insure superior hygienic conditions, abundant ventilation and the very best lighting facilities. Both buildings will be practically the same size and the style of architecture will also be similar. The two schools will represent a total outlay of about $90,000. Construction will be hollow tile walls, stucco exterior, brick veneer base and composition roof.

A Gem of Architectural Description

We take off our hats to the reporter of an Arizona newspaper who wrote this lucid and luminous description of the plans for a theater building:

The front will be in French Renaissance style, somewhat roccoco, which is to say, an exaggeration of the Louis Quinze style. The splendor and elaborateness of this decoration is particularly suited to a playhouse. The vestibule will have a barrel ceiling. Shells and scroll work on the exterior will be outlined by indirect lighting.

The proscenium arch will be treated in Renaissance. Indirect lighting also will be used in the interior. There will be a marble dado and tile floor.

The building can easily be converted into summer theater by means of sliding sections in the roof, of which there are ten.

Napa County Hall of Records

Plans are being prepared by Messrs. W. H. & W. G. Corlett for a two-story class "A" Hall of Records to be erected at Napa. The plans are being gotten out in the Oakland office of Architect Walter D. Reed, with whom Mr. W. G. Corlett is associated. The building will be of steel, brick and terra cotta and will cost approximately $35,000.

Housing Competition

Prizes aggregating $2100 are offered for plans, sketches, grouping and arrangement, for the housing of immigrants in industrial towns. The competition is conducted under the auspices of the National Americanization Committee, with the co-operation of the various societies and institutes of architects and engineers. The contest closes May 1.

The prizes are divided into two groups. The first covers plans for the housing of workmen in industrial communities not exceeding a population of 35,000. Entries in this class include plans for (1) single family houses; (2) combined family and lodging houses, which will permit separation of the family from the lodgers; and (3) boarding houses or community dwellings for numbers of single men or of single women.

The first prize for this class is $1000, the second $500, the third, fourth and fifth $100 each. In the first group, the committee has in mind a new community produced by a new industry, with the consequent need of supplying dwelling for a large number of employees. A considerable proportion of these employees will be needed permanently; the rest, as the construction gangs, from two to five years only. In the statement of the conditions of the contest which is being issued to competitors, it is pointed out that these two important considerations are the welfare of the tenant and the cost. The wages of the employees for whom the houses are designed are to be from $2 a day to $20 a week.

In the second group a first prize of $200 and a second of $100 is offered for a satisfactory substitute for the derailed freight and cattle cars now used to house construction gangs on railways.

The aim of the contest is to arouse interest in the subject, and to produce carefully worked out and entirely practicable housing plans and standards which it will be possible for employers and workmen and communities alike to demand and insist upon.

Inquiries concerning the competition may be addressed to the National Americanization Committee, 20 West Thirty-fourth street, New York City.

Portland Polytechnic School

Owing to several differences of opinion on the Benson polytechnic school plans, the Portland, Oregon, school board has called in a "consulting architect," who, with the co-operation of the Portland chapter, American Institute of Architects, will revise the plans and endeavor to better adapt them for the particular work for which the school is intended.

Beautiful Country Home

C. E. Gottschalk, the San Francisco architect formerly associated with Wm. Curlett & Son, has prepared plans for a splendid country house and outbuildings to be erected in the Burlingame Hills for Mr. Edward Christensen, San Francisco lumber magnate. The house has been designed in the English style with exterior of brick veneer, stucco and half timber. There will be twenty-two rooms, six baths, servants' quarters, etc. The interior finish will be largely of hardwood, including oak, mahogany and Janesero. The house and landscape gardening will represent a probable expenditure of more than $100,000.

Bungalow Court for Los Angeles

Chas. D. Wagner, 701 Story building, Los Angeles is preparing plans for a bungalow court of fifteen bungalows to be erected at the corner of Mission and Brent streets, South Pasadena, for himself. The style of architecture will be Dutch Colonial. Each house will contain four rooms and bath and will have concrete foundation, redwood siding on the exterior, shingle roof, pine and white enameled interior finish, hardwood floors, wall beds, floor furnaces, water heaters, etc.

Two San Francisco Residences

G. A. Applegarth, Claus Spreckels building, San Francisco, has prepared plans for two residences to be erected at Vallejo and Broderick streets. One is for himself and the other is for Mr. Chas. Lawrence of the S. L. Jones Co., 209 California street. Both houses have been designed in similar style of architecture and will have brick veneer and stucco exterior, with either clay tile or shingle roof. The houses will cost in the neighborhood of $20,000 each.

Ice Skating Rink and Cafe

Messrs. Cunningham & Politeo, First National Bank Building, San Francisco, have prepared plans for converting the Arcadia dancing pavilion at Eddy and Jones streets, San Francisco, into an ice skating palace. The plans also include a one-story class "A" addition which will be fitted up as a cafe with seating capacity of 1000 persons.

$50,000 Theater for Porterville

A $50,000 theater is to be built at Porterville for Mrs. Edith Williams. The play house has been leased by C. C. Howell, Everett Howell and A. R. Moore. It will seat 875 people and will have a cooling system for summer, which same system reversed will heat the building in the winter months.

Citrus Experiment Station

Lester H. Hibbard, 634 Marsh-Strong building, Los Angeles, has completed plans for the proposed citrus experiment station buildings to be erected at Riverside for the University of California. The buildings will be a modified Mission design. The main building will be two stories and basement, about 60x150 feet, and will contain the general offices, auditorium, library, etc. On either side of the main building will be a wing, each one story and basement, 50x90 feet, one for chemical and the other for plant laboratory. There will be a two-story frame residence for the director and a bungalow for the superintendent; also barns and garage. The main buildings and laboratories will be hollow tile or brick construction, with buff piastered exteriors, clay tile roofs, maple floors, and steam heat. There is $125,000 available for buildings and equipment.

Rescind Contract for Los Angeles High School

Because of a protest that the Board of Education was awarding a contract on an apparent bid instead of the bid contained in the signed proposal, the Los Angeles Board of Education has rescinded its action awarding the general contract for the erection of the main building for the proposed Los Angeles High School to the Los Angeles Planing Mill Company at $389,603, and the matter of the legality of accepting the bid has been referred to the law and rules committee with instructions to confer with the county counsel and secure his advice at the earliest possible moment. The protest was made by W. C. Crowell of Pasadena, who was the second low bidder.

Physicians' Building

William Binder, the San Jose architect, has completed plans and is letting contracts for one of the largest and best equipped physicians' and dentists' office buildings on the Pacific Coast. It will be five stories and basement and constructed of reinforced concrete. The interior will be finished in hardwood, marble and tile. A very complete, up-to-date mechanical equipment will be installed, including compressed air, vacuum cleaning, steam heat, hot water and elevator service. The owner is Judge Twohy and the estimated cost is $120,000.

House Built of Oregon Logs

James W. Plachek, the Berkeley architect, has prepared plans for a log house soon to be built at Thousand Oaks for Mr. R. W. Hawley. The logs were taken from the famous Oregon State building that attracted so much attention at the late Panama-Pacific Exposition.

$1,000,000 Office Building

Messrs. Bliss & Faville of San Francisco have been commissioned to prepare plans for the $1,000,000 office building which the Southern Pacific Company will occupy on lower Market street, San Francisco. It will probably be ten stories in height and will have the longest street facade of any building in San Francisco, extending from Steuart to Spear and Market to Mission streets. The proposed terminal station is not included in the present plans.

Hotel Alterations and Residence

MacDonald & MacDonald of San Francisco have completed plans for extensive alterations to the Hotel Wiltshire at 340 Stockton street, owned by Chas. H. Crocker. About $25,000 will be expended in changing the facade and rearranging the interior. The same architects have also made plans for an attractive country house at Santa Barbara for Mrs. Ida Murphy. It will cost $15,000.

Addition to Loft Building

Washington J. Miller, the San Francisco architect, has been commissioned to prepare plans for a one-story mill construction addition to the two-story building on Brannan street, owned by the Lachman Estate and occupied by Baker & Hamilton. It is stated that the latter company will discontinue its warehouses in Los Angeles and Sacramento and will ship its goods exclusively from San Francisco.

Five-Story Apartments

Messrs. Wood and Simpson, French Bank building, San Francisco, have prepared plans for a five-story class "C" apartment house to be erected on Larkin street, near Post, San Francisco. The building will be 40x95 feet and will contain sixty rooms arranged in suites of two and three rooms each, with all modern conveniences.

Alterations to Stewart Hotel

Louis C. Mullgardt has completed plans and taken figures for alterations to the Stewart Hotel on Geary street, San Francisco. Mr. Mullgardt is at work on the drawings for a new hotel and a number of Swiss Chalets in the Yosemite Valley and a residence in Palo Alto for the president of Stanford University.

Architect to Build Home

Warren Perry has prepared plans for a two-story frame and plaster residence for himself. The house will be erected in the Berkeley Hills at a cost of about $6500.

Los Angeles Store Building.

A. C. Martin, 430 Higgins building, Los Angeles, has made plans for remodeling the three-story brick building at 215 South Main street into a modern two-story store building for Albert Cohn, the grocer. The third story of the present structure will be removed and a two-story and basement building, 75x100 feet, will be fitted up for mercantile purposes. There will be a new front of terra cotta and pressed brick.

New County Jail for Redwood City

W. H. Toepke, formerly of Havens & Toepke, is preparing plans for a new county jail to be built at Redwood City. It will be constructed of sandstone to match the court house and will cost in the neighborhood of $60,000. Mr. Toepke also has prepared plans for a $15,000 motion picture theater to be built adjoining the bank building at Redwood City.

Stockton Moose to Build

The Stockton Lodge of Moose will erect a five-story class "A" theater and lodge building from plans being prepared by Messrs. A. W. Cornelius of San Francisco and Frank P. Morrell of Stockton. The theater has already been leased to the Turner & Dahnken Moving Picture Corporation. The building is to cost $100,000.

$40,000 Apartments

Milton Lichtenstein, the San Francisco architect has prepared plans for a $40,000 apartment house to be erected at San Rafael for Messrs. Herzog & Rake. The building will be of reinforced concrete and will contain stores on the ground floor and apartments above. The structure will be equipped with all modern conveniences.

Los Angeles Residence

Myron Hunt, 1405 Hibernian building, Los Angeles, has plans well under way for a two-story, fifteen-room frame and plaster residence to be erected at Oak Knoll for C. H. Baker. Concrete foundation, exterior plastered on metal lath, special tile roof, hardwood trim and floors, five bathrooms, four of which will have tile floors and wainscot, furnace, automatic water heater, tile fireplaces. Hollow tile construction is also being considered.

Competition for State Building

Referring to the competition to be held in connection with the San Francisco State building, Geo. B. McDougall, State architect, writes:

"The program for this competition is now being prepared. It will be impossible to give out the details until the program has been completed and approved."

Six-Story Apartment House

Dr. Redmond Payne, who has had splendid success building and renting high-class apartments in San Francisco, is having plans prepared by W. S. Hind, his architect, for a six-story, steel frame, reinforced brick store and apartment building to cost close to $100,000. It will contain seventy-two apartments of two rooms and bath each, with every modern convenience.

W. H. Weeks Plans More Schools

William H. Weeks of San Francisco has been commissioned to prepare plans for a $60,000 union high school building at Ukiah, Mendocino county, Cal. Mr. Weeks has completed plans for a $90,000 high school at Red Bluff and an $8000 country house for Supervisor H. S. Hersman at Gilroy.

Manufacturing Plant

Plans are being prepared by Engineer Robert M. Hemmingsem, Security Bank building, Oakland, for a four-story mill construction flour milling plant for Albers Bros. There will probably be one large building and several small ones. They will be built on ground recently leased from the city of Oakland.

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"Do It Electrically"

Special Articles this Month on "Street Lighting," and "Electric Heating for a Large High School".

Street Lighting.

By CHARLES T. PHILLIPS, C. E.

THE lighting of public thoroughfares with artificial illuminants dates back to the early Roman period when pans containing oils and torches of resinous wood were used. In 1417 A. D. an attempt was made to light the streets of London by having each householder hang a lantern from a window on winter evenings. In 1524 the streets of Paris were lighted with oil lamps. New York City installed oil lamps in 1762 and, in 1807, the first gas street lighting was installed in Pall Mall, London. The streets of San Francisco were lighted by gas in 1854; Los Angeles, 1867; Seattle, 1873; Tacoma, 1885, and Spokane, 1887.

Although numerous methods of lighting streets have been employed the field has narrowed down to gas and electricity.

Since the commercial development of electricity, street lighting has grown from a crude attempt into an art as well as an exact science, and, for a successful installation, the design should embody artistic as well as scientific treatment. Freak lighting and lighting designed by "judgment," which is only another word for "guess," will never be successful any more than a building that is not designed by an architect. In either instance, attractiveness and economy have not been properly considered.

The majority of the large cities in the country have been giving the lighting of streets, alleys, boulevards and parks considerable attention during the last ten years. Commissions have been appointed, engineers employed and investigations have been carried along in various ways. These cities also have some form of city planning committee or art commission who passes upon the artistic design of all structures or devices that are proposed to be erected on public property.

The Pacific Coast cities have been rather slow to follow the lead taken by New York, Chicago, Milwaukee, Toronto and other towns, with the possible exception of Seattle. Some years ago a thorough investigation was made by the city of Seattle on all types of artificial illuminants and the application of same to the lighting of streets. The report embodied the installation of an electrolier system designed along original lines with provisions for future growth; the result is that today Seattle is perhaps the best and most efficiently lighted city in the country.

Numerous cities of the second and third class have installed systems of street lighting on the principal streets, but very few have made any attempt to analyze the situation and incorporate in the installation engineering principles. They have rather blindly followed the lead of some other locality. The results have been that such items as provisions for future growth, efficiency, low first cost, maintenance cost, obsolescence, amortizing installation cost, provisions for accentuated lighting on special occasions and numerous other items have received no consideration whatever.

It has been said that illuminating engineers have recommended so many different methods of lighting streets that each installation was only a pet scheme of that particular engineer. This is far from the truth. The variety shown in street lighting installations is due entirely to conditions that exist in different localities and to the rapid advance made in the various types of lamps and auxiliary devices. Illuminating engineering is a science, based on a thorough knowledge of the physical sciences, not the least of which is an understanding of the eye, its structure and its characteristics. Physical research work, covering the investigation of the absorbing, reflecting and diffusing properties of matter, the photometrical measurement of light, the study of complex phenomena of color and color sensation and the production, utilization and effect of luminous energy and attendant radiation, is the foundation upon which the science of illumination is based.

Street lighting is perhaps the most difficult problem that the illuminating engineer has to solve. This is due to

Editor's Note.—Mr. Phillips is well known on the Pacific Coast as an authority in illumination and his articles are always replete with valuable information.

the large area to be lighted, the lack of reflecting surfaces, the long hours of burning, exposure to dirt and weather, the high cost of the installation and the lack of appreciation by the public and city officials.

To meet the economical demands for street lighting, the complete installation from the source of energy to the lamp should be considered as a whole. High efficiency in the lamp or the watt per candle-power does not necessarily mean high efficiency in the complete installation.

To quote from the Atlantic Monthly, "Until the facts are in the right order, there is no truth," is a text that could be well followed in solving a problem in street lighting. Data on lighting apparatus or installations is usually misleading unless interpreted in its "right order."

The best light for street illumination is that which fits local conditions, regardless of results that may have been obtained elsewhere.

New Glass for Electroliers

A new glass, said to be similar in appearance to Italian Carrara marble, has been perfected by one of the largest manufacturers of glass in this country, and will be submitted for adoption for the globes of San Francisco Market street standards in the new lighting system for that street.

According to W. d'A. Ryan, the glass will, in all probability, become generally adopted for illuminating globes. Besides being rich in texture and having the highest possible degree of luminosity, the glass will enable the three lights on the standards to be brought closer together without danger of breakage from heat. This, it is said, will increase the intensity of the light and at the same time give a most artistic appearance to the standard.

"Wire Your Home" Month

Plans have been perfected for a nation-wide house-wiring campaign this spring to be known as "Wire Your Home" month. The date for the campaign is the period from March 15th to April 15th. The object is to coordinate the various individual house-wiring campaigns conducted each year by electrical interests into a general campaign. The fact that not 8 per cent of the homes of this country are wired for electricity, and that not 20 per cent of the houses on the existing lines of the central stations have electric service, strengthened the committee's belief that if a great campaign drive was made to wire more homes, all interests co-operating, greater results could be obtained than by a series of disconnected campaigns.

The Next Step in Electric Lighting

ONE of the largest factors of expense in maintaining the ordinary electric arc lamp is its trimming and cleaning—operations made necessary by the fact that the arc exists in ordinary air. The heated carbons burn and are consumed very much as is the wick of an oil lamp. Experiments now in progress toward constructing an arc lamp that will require no more trimming and cleaning than an incandescent lamp have met with a considerable measure of success; and while they are still in the laboratory stage, Mr. W. A. Darrah, who writes of them in Metallurgical and Chemical Engineering (New York, December 1), holds out hopes that the new form of lamp will soon be on the market. The plan adopted is so to design the lamp that the supply of material for the arc will come, not from the electrodes, but from a surrounding gas or vapor, and can be used over and over again. To quote and condense:

"A study of the light-efficiency of an arc from a chemical standpoint shows that there is a certain rather limited class of substances which when introduced into the arc in small quantities produce a very great increase in luminosity. Thus the addition of small quantities of cerium or calcium compounds to the carbon arc may increase its efficiency over 300 per cent, and the addition of titanium (preferably as an oxide) to the magnetite arc similarly produces an increased luminosity without a corresponding increase in energy-consumption.

"A study of these facts led to the conception that perhaps an arc could be maintained in a closed vessel and supplied with these light-producing elements in the vapor form.

"Accordingly, a crude apparatus was arranged in which two hard carbon electrodes were placed vertically above each other in a tight glass vessel, and an arc drawn between the electrodes. As might be expected, this arc was non-luminous and very unstable. Accordingly, a small amount of carbon tetrachlorid was poured into the vessel, with a rather marked result. The arc then became stable and could be drawn out to several times the length which was previously possible, although its luminosity was not much increased. A flaky soot formed by the decomposition of the carbon tetrachlorid also filled the glass chamber. A trial was next made with stannic chlorid, with a similar increase both in stability and allowable arc length. In this case, also, the luminosity of the arc was much greater. The stannic chlorid, however, was decomposed by the air and moisture present, forming a white insoluble powder upon

the walls of the chamber, soon shutting out most of the light.

"A more elaborate apparatus was therefore constructed in which the graphite electrodes were separated by an electromagnet acting upon an iron core within a glass chamber.

"The air was exhausted from the chamber, a small quantity of stannic chlorid vapor at a pressure of from three to four centimeters was allowed to enter and the arc drawn. Under these conditions a stable arc three to four inches long could be produced. The arc was intensely white and so steady that it had the appearance of a thick incandescent filament slightly bowed and surrounded by a flamelike less luminous shell of yellow. The vapors from this arc however, soon collected on the walls, forming a dense brown coat, which proved to be mainly tin carbid with a mixture of stannous chlorid and other intermediate compounds.

"These preliminary tests having indicated possibilities as well as having shown the difficulties to be overcome, additional smaller lamps were constructed along somewhat improved lines."

The type finally adopted has an arc-chamber in which the arc is formed between tungsten electrodes, partly surrounded with a refractory insulator. Experiment showed the exact combination of gases that would produce the least "soot." These are introduced in liquid form. The appearance of the arc in the new lamp is described as differing in important respects from that of the ordinary arc lamp. We read:

"It is usually very stable, about ⅛ inch in diameter, tubular in form, and varies from two to five inches in length, the variations being due to differences in pressure, natures of the gases supplied, etc. A high pressure naturally increases the intrinsic brilliancy of the arc, but makes it necessary to operate at a shorter length, as the gas currents due to temperature differences and arc reaction are correspondingly more violent. The diameter of the central luminous tube is also reduced with an increase in pressure.

"Some of the arcs revolve very slowly, but as a rule the low pressure of the gases minimizes the motion of the arc, and the general appearance is that of a thick, intensely white incandescent filament slightly bent at the upper end. With some of the vapors, as, for example, the metaloid halogen compounds, antimony, phosphorus, and arsenic chlorids, the central tubular portion is surrounded by a ragged flame, which is light pink in the case of arsenic and pale green in the case of phosphorus.

"The flame portion acts somewhat as an absorbing screen, thus reducing the total useful radiation. It is a curious fact that this flame may exist for a short but appreciable time after the circuit has been interrupted, thus indicating that it probably does not have a part in the conduction of electricity through the vapor, but appears rather to be a zone in which the vapors after being dissociated by the heat and electrical effects of the arc recombine."

The increased length of the arc results in greater efficiency, since the brilliancy is also much enhanced. By using five times as much power the light-effect may be multiplied by 20, the efficiency being thus four times that of the standard form. The writer then intimates to inventors that a new field is thrown open here for their exploration. As he puts it:

"It would appear that an investigation along the lines here described opens up new possibilities in light production, but it can not be too strongly emphasized that while the results set forth in this paper offer considerable promise from an applied, practical standpoint, yet they are not presented for consideration as representing a finished device, but merely a research in what seems to be a new and interesting field."

G. A. Lansburgh Busy

G. A. Lansburgh, the San Francisco architect, has completed plans and let contracts for a two-story store and loft building in the Mission district and is now completing plans for a one-story clinic building for Mt. Zion hospital, San Francisco. The funds for this building have been furnished by M. Gunst. It is rumored Mr. Lansburgh may plan the new Orpheum theater at Portland, his designs for the San Francisco, Los Angeles, St. Louis and Kansas City play houses having given much satisfaction.

Electricity in the Schools

Western States have been much more progressive than eastern in recognizing the value of electricity in the household, notably for cooking apparatus, and the city and State authorities in the far West are realizing its importance. Many of the boards of education are equipping the high schools and colleges with electric household appliances and the State and city institutions, notably the hospitals, are doing the cooking for the institutions by electricity.

Many Railroads Operated by Electricity

Over 2000 miles of the railroad lines of this country are now operated by electricity. In recent tests between steam and electric traction with the same load of freight up a 2 per cent grade, the electric locomotive had an average speed of fifteen miles per hour as against seven miles for the steam engine.

20,000 Lifts in Manhattan

In the Borough of Manhattan there are roughly 10,000 passenger elevators and about the same number used for freight. Of the passenger type one-half, or 5000, are in buildings of ten stories and over. The electric is fast replacing other types. About 85 per cent of all new machines are electrically driven.

World's Largest Electric Range

The largest electric range in the world has been installed in the Montana State Hospital, Warren Springs, Mont. It will cook meals for 1500 persons daily. The rates for electrical cooking in force in the Intermountain country makes it the most inexpensive form of cooking.

BURLEY HIGH SCHOOL BUILDING, BURLEY, IDAHO

Electric Heating for a Large High School

SOMETHING unique in school house heating has been introduced by the school authorities at Burley, Idaho. A new high school building recently finished there has been equipped with an electric heating plant, said to be the largest of its kind in the world. The building has been occupied since last September. It is constructed of concrete and is three stories high with nothing below the ground level except a gymnasium and the heating plant rooms. C. Lewis Wilson, an architect of Butte, Mont., planned the building.

The school trustees chose the electric heating system after investigating a similar plant at Rupert, Idaho, which is about nine miles from Burley. The Minidoka dam, where the energy for the building is generated, is twenty-two miles from Burley, on the Snake river. The government contract is with the city of Burley and the school has a contract with the city. According to this contract, electricity is furnished at a cost of $1.00 per kilowatt per month. This, it is stated, is probably the cheapest rate for electricity on record at the present time.

The energy is carried from the dam to the city on high tension, 33,000-volt, three-phase transmission lines. It enters the building underground by three-phase, 2/0 steel-taped feeders, 2200 volts. In the transformer room the voltage is reducted to 440 volts for heating at full capacity and to 220 volts for times when not so much heat is being used and when the fan is not in motion.

This is accomplished by three 200 K.V.A., type H, 2200-volt primary, 440-220-volt secondary, 60-cycle transformers of the General Electric Company's make. These are located in the concrete transformer room, in the front portion of the basement heating room. They are controlled from the superintendent's office by an automatic no-voltage and overload release switch, three-phase.

From the transformer room the energy is conveyed to the switchboard by three 500,000 c.m. three-phase, steel-taped cables and here distributed to the different relays which feed the heating grids.

The grids are arranged in two batteries, the first battery being at the foot of the air shaft which supplies air from the roof level. This set heats the air to 60° F., before it strikes the air washer and humidifier. An automatic temperature control keeps the air at this temperature by throwing the grids on and off as changes in the outside temperature require. This makes the supply of heat absolutely automatic and no more energy is used than that necessary to supply the desired heat.

The water in the air washer is circulated by a motor and centrifugal pump. The spray plays over three sets of louvres. Beyond the washer is located the fan and beyond that is the plenum chamber which is divided into an upper and lower compartment. At the fan side of the upper compartment is the second battery of grids. The air in this compartment is kept at the desired temperature by an automatic control which throws the energy on and off the grids, as the temperature requires.

The heat is controlled in each room by thermostats operating dampers at the plenum chamber openings. Air is taken from the lower compartment of the plenum chamber, when the room is too warm, and from the upper chamber when the opposite condition prevails.

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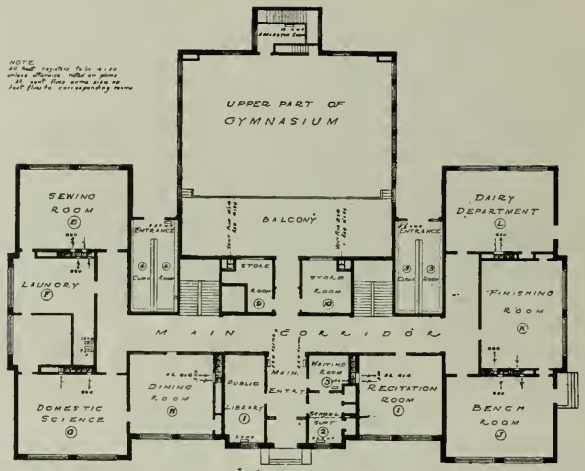
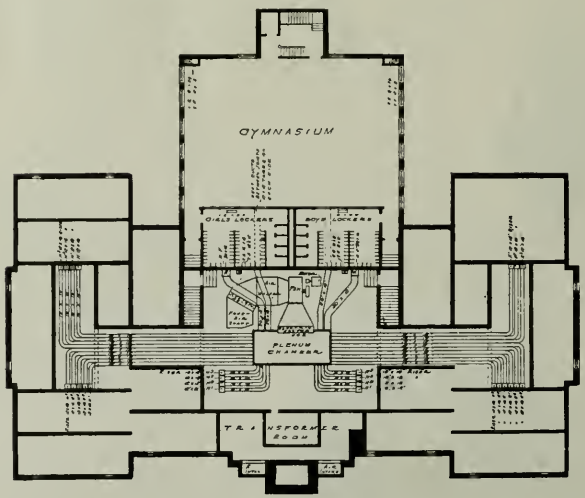


FIRST FLOOR PLAN, BURLEY HIGH SCHOOL.



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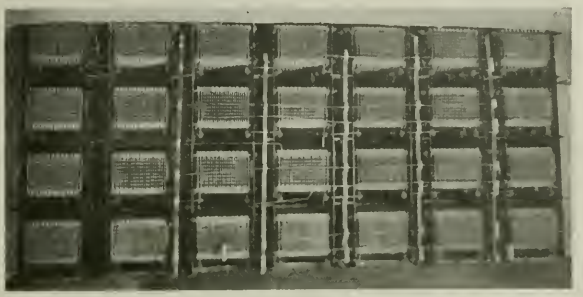

BATTERY OF GRIDS IN PLENUM CHAMBER

The system of control was installed by the Johnson Service Company.

Air is supplied to the building from the roof level and through the operation of the equipment mentioned, is washed and humidified and sent into the rooms at a temperature which is controlled automatically. An overheated room is not cooled by introducing more cold air and thus dissipating the over-supply of heat, but the energy is cut off before the oversupply is produced. At the present writing, says a writer in the Heating and Ventilating Magazine the system is proving very satisfactory and the amount of energy being used is costing $187 per month. This makes the heating comparatively more expensive than coal, but several factors enter into the problem to alter conclusions as to total cost. The first is the matter of space. The electric heating plant occupies a comparatively small space in the basement. Another form of heating would require an extra building and smoke stack.

The life of the equipment here used will be five to eight times the life of a steam plant. Again, the labor required to operate this plant is almost negligible and this makes a large saving. The absence of coal in the building is, of course, an especially desirable feature of the plant. The smoke from the coal plant is something that can well be missed. Still another point is that the heat is always ready. During the four years that the government has been generating electrical energy at the Minidoka dam, the service has not been cut off fifteen minutes at a time.

The Utah Engineering and Machinery Co., Salt Lake City, was the successful bidder on this work and the design was furnished by the company's chief engineer, N. L. Alison.

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Fixing a Maximum Bid

Somewhat unusual conditions are connected with the readvertisement of a track installation job by the public service commission of the first district, New York City, says Engineering & Contracting. The first bids on this work were opened last November. The low bid at that time amounted to $53,930, while the next lowest bidder put in an estimate of over $102,000. The low bidder immediately claimed that he had made a mistake in his figures and desired to withdraw his bid. The commission refused the request and awarded him the contract and sent the documents to the board of estimate and apportionment for approval. Later the low bidder filed a stipulation agreeing to pay the cost of readvertising for bids if the commission would relieve him of his obligation under the original award. He also agreed to put in a bid under the readvertisement at a figure not to exceed $94,280.50, which he said was the amount he intended to bid in the first place. The commission, perhaps touched by this plea, and perhaps not unmindful of the difference between $94,000 and $102,000, ordered a new call for bids. It will be interesting to note how much competition there will be for a contract where the maximum bid that will be considered is known in advance.

Club Fails to Get Valuable Books

(From the San Francisco Examiner.)

There is a vacant bookcase in the rooms of the Architectural Club into which a nice $3500 set of books would just about fit. That is, they would, but they won't.

When the plans for the Exposition were drawn, the directors bought some handsome illustrated volumes for the use of the Architectural Commission, and they were considered a bargain at $3500. Among the Exposition architects were several members of the club, who agreed that it would be a fine idea to get the Exposition to give the books to the club, after the close of the fair.

This idea was attractively put up to the Exposition executives in a recent petition, but they failed to get the architects' point of view. There was the obligation to the stockholders to consider.

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AGENTS

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The question arose as to whether or not the Architects' Club was in any sense a public body. Some polite correspondence was exchanged, but they didn't seem to get very far with the deal.

Then Joseph M. Cumming, executive secretary to President Moore, passed the buck to Harris D. H. Connick, who is director of works and general all-round Exposition watch dog. The architects were persistent in their efforts to get the books, if not as a gift, perhaps for about ten per cent of the cost. There was some acrimonious comment regarding the attitude of the Exposition management. * * *

While the discussion was going on, Connick had sold most of the books. Furthermore, he will sell the rest of them. He said:

"The Exposition has absolutely no right to give these books to the Architectural Club, or any other club. They are the property of the stockholders, and it is our duty to dispose of them to the best possible advantage. We are selling them wherever we can, on the best possible terms."

Improvement to Country House

Messrs. Ward and Blohme, the San Francisco architects, have completed plans for extensive alterations and additions to the country house near Redwood City of Mrs. Matthew Harris, wife of the well-known San Francisco lumber dealer. The improvements will represent an expenditure upwards of $20,000.

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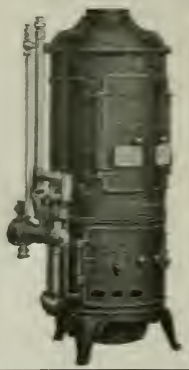

"Pittsburg" service luxuriates the ordinary conveniences of the toilet. Efficiency in the kitchen and laundry is greatly increased if a "Pittsburg" heats the water.

The "Pittsburg" is *guaranteed* mechanically perfect, is easy to install and requires little or no attention after it has been connected to the hot water piping.

Pittsburg Water Heater Co.

Phone Sutter 5025

237 Powell Street - - San Francisco

COURTEOUS CONTINUOUS PACIFIC GAS & ELECTRIC COMPANY RELIABLE

"PACIFIC SERVICE"

LIGHT HEAT POWER

Pacific Gas & Electric Co.

445 SUTTER STREET
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PACIFIC PHONE
Sutter 140

HOME PHONE
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Fresno Architects Busy

Eugene Mathewson, Cory building, has prepared plans for alterations and a one-story addition to the First National Bank of Selma. It will be of brick construction and will cost $12,000. The same architect is preparing plans for a three-story brick lodge building for the Visalia Lodge of Moose. Plans have been completed by Mr. Mathewson for a $7000 residence for Ralph Woodward, son of A. J. Woodward, the Fresno banker.

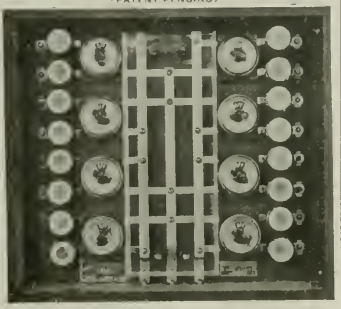
Ernest J. Kump, Rowell building, is preparing plans for a Union High School building at Wasco, Kern county. Mr. Kump secured this commission in competition with several other architects. The building will be one-story brick and plaster with clay tile roof and will cost $45,000. The same architect has plans for a $25,000 school at Riverdale and contracts have been let for a $12,000 four-room frame school for Wolters Colony, just outside the city of Fresno. Bids have been taken by Mr. Kump for the erection of a two-story brick store and office building in Tulare for R. Linder. The estimated cost is $15,000.

R. B. Hotchkin, Rowell building, has completed plans and taken figures for the new Fresno Christian Science Church. The edifice will be constructed of steel, brick and terra cotta and will cost approximately $50,000.

Wybro Panels at the Building Material Exhibit

White Bros., manufacturers and distributors of the well-known Wybro hardwood panels, have one of the most attractive booths at the Building Material Exhibit, No. 77 O'Farrell street, San Francisco, which opened its doors to the building public a few days ago. The booth shows the extensive variety of Wybro panels carried in stock by White Bros. and gives the prospective buyer a splendid idea of the possibilities of the Wybro panels for interior finish. The booth itself is built of highly polished Gaboon mahogany. Sixteen panels, each made of a different kind of hardwood, are shown, as well as a complete line of cabinet woods in general use.

DEMCo
SAFETY FIRST
PANEL BOARDS
(PATENT PENDING)



The only logical panel board embodying absolute SAFETY from shock or accidental contact with live metal parts and particularly adapted for apartment houses, school buildings, churches and department stores.

DRENDELL ELECTRIC. & MFG. CO.
169 ERIE STREET SAN FRANCISCO

Contracts Between Contractors and School Boards Not Legal

A California school board received bids for the erecting of a school building according to statutory requirements and after accepting the lowest bid, eliminated certain work from the contract. Later the board entered into a separate agreement with the contractor for this work and the court sustained the superintendent of schools in his refusal to issue a warrant for the payment of this work on the ground that the board had no right to enter into a contract without receiving bids. The court further refused to allow any recovery by the contractor on a quantum meruit. When the power of a board to contract is limited to a prescribed mode, the compliance with these conditions is a jurisdictional prerequisite to the exercise of the power. Without compliance with the conditions the board is powerless and any contract it makes is absolutely void.—Reams v. Cooley, 152, p. 293.

THE INVINCIBLE VACUUM CLEANERS
Comprise the Largest and Most Complete Line of Vacuum Cleaning Machinery on the Market. They also Stand First in Simplicity, Efficiency and Durability
R. W. FOYLE, General Agent
416 Harriet Street Telephone Park 2667 San Francisco, Cal.

Portland Building News

The Willamette Steel Company and the Northwest Steel Company will jointly erect a giant shipbuilding plant in Portland, Ore.

With increasing business the Kaola Company is enlarging its plant, while the Hawley Paper Co. at Oregon City has broken ground for its half million dollar mill in that city.

Hurley-Mason Co., large contractors, with offices in Portland, Seattle and Spokane, have inaugurated a new scheme in the matter of building. By associating with them a leading architect in each of these places, the owner has but one person with whom to deal. The innovation will be watched with interest.

The United States National Bank has closed the purchase of the northwest corner of Stark and Fifth streets and presumably will erect a fine banking building on that block. Just two hundred feet from there, on another corner, the First National Bank is erecting a marble structure for its own use.

A large Eastern concern is seeking a building location, demanding a free site, expecting to expend some $300,000 on the plant.

The labor unions of Portland have decided to erect a labor temple and have taken options on a quarter block and will have a final vote on the proposition at once. It is the purpose to concentrate all the various bodies in the one building.

It is expected that there will be a large amount of road building during 1916, including numerous bridges, in the latter instance the tendency being toward concrete construction rather than steel or wood.

Portland Auditorium Contract

Editor The Architect and Engineer:

Just how far may one go, in allowing a contractor to correct his bid, before signing up a contract, was determined the past month at Portland, Ore., by the City Commissioners, in the matter of Hans Pederson of Seattle, lowest bidder on the Auditorium building. According to the ruling of the city solons, a mistake, no matter how palpable, may not be corrected and the figure given at the outset must stand. The unfortunate bidder has his choice of signing up or forfeiting his certified check, in this case $20,000.

Only $15,000, five per cent on his proposal, however, is in jeopardy, but whether he will sign or go to law over the matter remains to be seen.

The two principal items are on brick and concrete. In the latter the estimator, in adding his figures, neglected to carry **two,** but carried over to the next column **one,** thus making ten thousand dollars on that item. In his brick bid he multiplied two hundred and eighty-four thousand brick by $45 and got a total of $1255 instead of $12,780, an error of $11,525.

While it was clearly shown that it was a clerical error, the commissioners took the position that Mr. Pederson was to blame for errors of his estimator and must stand the loss. It was shown in a precedent of a large contractor here on public construction, a short time ago, wherein the former executive board, on the recommendation of the engineers, allowed figures on a proposal to be corrected to read $17,000 instead of $7000, as he originally made it, and it was held by Mr. Pederson, as well as his attorney, that he, Pederson, had as much right to correct his figures as the other man, especially as this raise in his totals would still leave him $24,000 lower than the next highest.

In matters of decision at law there have been about as many one way as the other, and the City Attorney so stated, adding that the commissioners would be clearly within their rights to allow Mr. Pederson to correct his figures. It was suggested that in the completion of the contract if Mr. Pederson could clearly show a loss, they might reimburse him, but it is not probable that the law would allow this and presumably the only way out is for "extras," which are bound to be demanded owing to changes in construction, not an improbable condition. Mr. Pederson has about a million dollars in contracts in Seattle.

A. J. CAPRON.

Oakland Store Buildings

C. W. Dickey, the Oakland architect, is preparing plans for a one-story class "C" store building to be erected on the property at Fourteenth and Webster streets, at present the site of a large stable. The new building will be made sufficiently strong to carry more floors later on.

It is reported that a building will also be erected from plans by Mr. Dickey on the small gore lot known as the Dargie property, at the intersection of Fourteenth and Franklin streets, and the Southern Pacific right of way.

Plans have been completed and work is being carried on by the day for five stores on the west side of Broadway, near Fourteenth, for Walter Amstein. The building will cost approximately $12,000. Walter D. Reed is the architect.

Personal

Messrs. Chesley K. Bonestell, Jr., and Charles H. Cheney have been elected members of San Francisco chapter, American Institute of Architects.

What Constitutes a Lumber Dealer

[Improvement Bulletin.]

Throughout the country there are many retailers who classify themselves as lumber dealers when, as a matter of fact, actual sales indicate that they might be classified under any of a half-dozen or more heads. As a demonstration of the materials handled and sold by a retailer of this type the following report of a day's sales made by a line yard to the home office is interesting:

Ten sacks cement.
Ten sacks plaster.
Five rolls roofing paper.
Two hundred feet wall paper.
Fifteen hundred bricks.
Three ricks of wood.
Forty bundles of lath.
One sack Long fertilizer.
Ten gallons paint.
One hundred rods wire fencing.
Fifty galvanized iron posts.
Fifty pounds nails.
One gallon "Gopher-Go."
One galvanized iron garage.
One two by four-eight feet.

The term "building material dealer" has been used to cover a "multitude of sins" and possibly would prove the most suitable in this particular instance.

Book Review

The seventh edition of the Electrical Blue Book presents itself in a very practical and useful form, the new size adapting it for convenient filing with the business literature of the buyer of electrical material. Lighter paper is used and the volume is compact notwithstanding the comprehensive treatment of the subjects included in the work. Publication has been delayed until complete analysis and correction of changes in the National Electrical Code could be incorporated, so that this section of the Blue Book might conform to the most recent publications of the Code under the direction of the National Fire Protection Association. The underlying feature of the Blue Book is the presentation of the National Electrical Code, with illustrations and explanatory notes.

Published by the Electrical Review Publishing Company. Cloth. 250 pages. $2.00.

Building Material Exhibit

San Francisco's Building Material Exhibit at 77 O'Farrell street is now open to the public and it promises to become popular, especially with architects, contractors and owners who wish to keep themselves informed on all matters pertaining to building construction. The O'Farrell street exhibit is the outcome of many months of indefatigable labor on the part of the promoters, Messrs. Simpson and Fisher. Despite many obstacles which have been successfully overcome, the exhibit has already been placed upon a permanent paying basis, its backers say, and the co-operation of the public alone remains to make the enterprise a splendid success.

The idea of a permanent building material exhibit is not a new one. It has been adopted by many of the large Eastern cities with satisfactory results. Los Angeles has supported such a venture for two years and reports from the southern city tell of the growing popularity of the exhibit there.

The purpose of the San Francisco exhibit is to provide a convenient meeting point for architects and others interested in building, and to have at hand for their inspection practical demonstrations of the various products that are necessary in the construction of a complete building.

Following is a partial list of exhibitors to date:

Pacific Gas & Electric Co., W. P. Fuller & Co., H. W. Johns-Manville Co., Spencer Turbine Cleaner Co., Albert S. Bigley, White Bros., W. D. Henderson, Standard Varnish Works, Zouri Drawn Metal Co., Hughson & Merton, Winslow Bros. Co., Geo. M. Clark & Co., P. Grassi & Co., Inlaid Floor Co., Ralston Iron Works, H. E. Simpton & Co., A. J. & J. R. Cook, Eri H. Richardson, Scott Hiner Co., United Glass Works, Geo. Sweet-Ideal Gas Heaters, Pacific Coast Cork Insulating Co., T. H. Meek Co., Rubino Bros., Anderson & Gaffney, Acme Patent Window Co., The H. B. Ives Co., Ansonia Electrical Co., Chicago Spring Butt Co., Watrous Acme Mfg. Co., Benjamin Electrical Specialties, Hydraulic Press Brick Co., National Mill & Lumber Co., E. M. Moores, American Mailing Device Co., Vogel Color Studio.

DO YOU USE ANY HIGH GRADE
CABINET or HARDWOODS?
WE MAKE A SPECIALTY OF THEM
PRIMAVERA, MAHOGANY, KOA, JENISERO, OAK, ASH, ETC.
DIECKMANN HARDWOOD CO.
Beach and Taylor Streets, SAN FRANCISCO

ROBERT W. HUNT JNO. J. CONE JAS. C. HALLSTED D. W. McNAUGHER

ROBERT W. HUNT & CO., ENGINEERS

BUREAU OF INSPECTION TESTS AND CONSULTATION

251 KEARNY ST., SAN FRANCISCO

NEW YORK LONDON CHICAGO PITTSBURGH ST. LOUIS SEATTLE TORONTO MEXICO CITY

CEMENT INSPECTION

INSPECTION OF STRUCTURAL AND REINFORCING STEEL

REPORTS AND ESTIMATES ON PROPERTIES AND PROCESSES

CHEMICAL AND PHYSICAL TESTING LABORATORIES

Industrial and Other Notes

The Medusa White House

The latest literature on Medusa products is "The Medusa White House," a vest pocket size booklet that appeals particularly to the home builder. Here are a couple of interesting paragraphs from the little book:

"The Medusa Cement products are well and favorably known by architects everywhere. Before you break ground for your new home ask your architect about Medusa White Portland Cement, Medusa Waterproofing and Medusa Waterproofed White Portland Cement. Let him show you their possibilities for your new home.

"Medusa White Houses embody the modern essentials—they are durable, fireproof and sanitary."

* * *

"No one expects Westminster Abbey ever to get 'out-of-date.' It is a type—perfect through all time because it expresses the material from which it was made. With White Portland Cement, there is the same opportunity—a permanent material offering every chance for treatment peculiar to the material itself. It is not subject to the caprice of time or fashion. The Medusa White Houses of today will carry their distinctive features into the ages to come. They will stand as a tribute to the artistic sense and practical foresight of their builders."

Los Angeles Apartment House

C. E. Borton, 806 Hibernian building, Los Angeles is preparing plans for a part four-story and part six-story brick apartment building to be constructed on Olive street, near Third, for himself. In all there will be about 125 rooms, divided into two and three-room suites. There will also be a lobby, social rooms and the necessary storage rooms. The building will have concrete foundation, pressed brick facing, marble entrance, pine and hardwood interior trim and flooring, wall beds, composition roofing, electric elevator, steam heating system, vacuum cleaning plant, composition drainboards. The building will cost $100,000.

New Partnership

A. D. Collman and W. C. Duncan, formerly the Collman & Collman Co., announce their association under the firm name of Collman & Duncan, Sharon building, San Francisco, for the purpose of general contracting.

THE BIG-AN-LITTLE CONCRETE and MORTAR MIXER

Big Output—Little Weight
Big Profits—Little Cost
Capacity 35 Cu. Yds. a Day

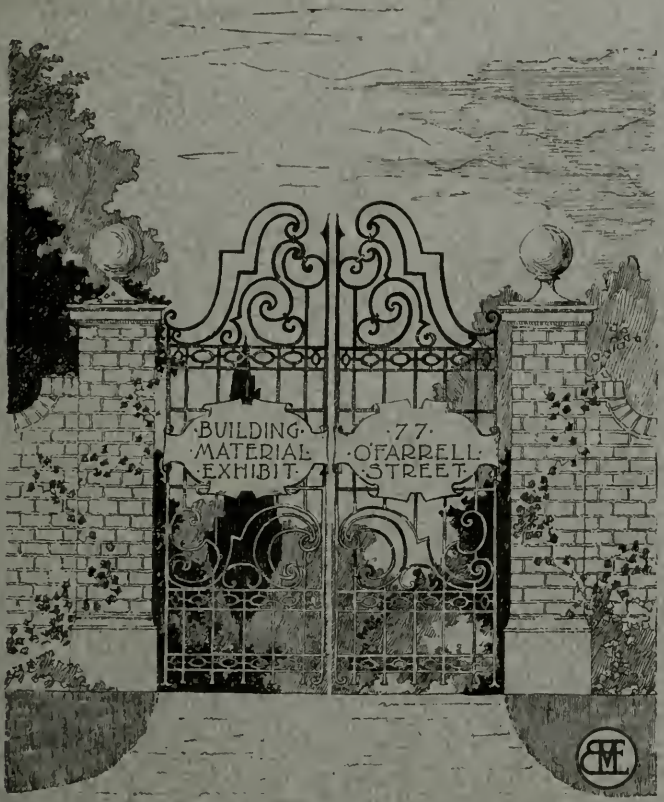
All rounded surfaces—no corners for concrete to lodge in. Revolves on ball thrust bearing, hermetically sealed to prevent grit from working in.

Equipped with levers for turning over and locking device to hold drum in place while mixing.

EDWARD R. BACON COMPANY

Pacific Coast Agents

51-53 Minna St., San Francisco Tel. Sutter 1675



ARCHITECTS, CONTRACTORS AND OWNERS ARE CORDIALLY INVITED TO VISIT AND INSPECT THE LATEST AND MOST APPROVED MATERIALS, FIXTVRES AND APPLIANCES ON DISPLAY AT 77 O'FARRELL ST. (3d floor), SAN FRANCISCO.

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BVILDING MATERIAL EXHIBIT

Telephone Sutter 5533

The Loud Gurgling

Pacific

and hiss of a noisy closet is distressing to the sensibilities of most people. In perfecting Kwy-eta to its present state of silent operation we have overcome a source of daily annoyance to the houseowner.

The "Pacific" Vitreous China Syphon Jet Bowl has a large water surface and gives a powerful flush with a minimum amount of noise. It is the most sanitary and efficient type of closet.

Kwy-eta is strongly made to give years of service without the necessity of constant repairs. Like all the "Pacific" line it is guaranteed forever against any defects in workmanship or material.

"Pacific"

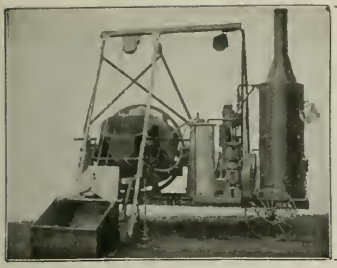
QUALITY · DESIGN
Pacific
GUARANTEED

Plumbing Fixtures

Show Room
67 New Montgomery St.
San Francisco, Calif.

Factories
Richmond, California

MADE IN CALIFORNIA U.S.A.



AUSTIN Improved Cube Concrete Mixer

Made in all sizes and styles of mountings for general concrete work, for road and pavement construction, and for bituminous concrete work.

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SAN FRANCISCO BRANCH OFFICE:

473-485 SIXTH STREET Tel. Garfield 8368

Venetian Blinds for the School Room

Until very recently Venetian blinds have been used almost exclusively in schools and residences where the absence of irritating light rays, together with good ventilation, are considered essential to comfort and health. The blinds have been found to give splendid satisfaction in office buildings, libraries and banks and architects are specifying them in many cases in preference to other kinds of shades.

What one physician thinks of the Venetian blind for properly tapering the light in the school room is indicated in the following letter addressed to the Western Blind & Screen Company of Los Angeles, by Dr. Ross Allen Harris, eye, ear, nose and throat specialist, 424 South Broadway, Los Angeles, under date of February 16, 1916:

Gentlemen:

I have had a considerable number of patients, especially among teachers and pupils of the public schools, who complain that reflected light is painful. Blondes suffer apparently more than brunettes, due to the relative lack of pigmentation in the retina.

Realizing that the ultra-violent rays of our brilliant sunlight were responsible for this condition I have endeavored, by having the appropriate lens-prescription ground in various colors to eliminate these particular rays. This has usually given relief, but, as these colored lenses are rather expensive I have sought for a wider application of the principle.

I believe I have found it in your Venetian blinds, which I have tried out faithfully for some time in my private office. Many patients exclaim at the comforting sense of relief on entering this room.

It is my belief that this method of softening the bright daylight is the best solution of the problem that may be obtained at present, both for pupil and teacher. I have observed that the light in the average school room is arranged for the benefit of the pupil, the teacher's eyes being ignored. As a result the teacher, suffering from this unconscious eyestrain, becomes irritable. This condition is transmitted to the pupils who become restless and often unruly.

I find that your Venetian blinds allow every variation of light and shade, permit perfect ventilation, are readily adjusted and shut out the irritating light-rays more satisfactorily than any other method I have discovered.

Sincerely,
R. A. HARRIS, M. D.,
Ophthalmologist to Parent-Teacher Clinic, Los Angeles City Schools.

Noted Architect's Daughter Becomes Interior Decorator

Architects and owners will be interested in learning of a new acquisition to San Francisco's heretofore too limited field of competent interior decorators. Mrs. H. C. McAfee, daughter of the late Arthur Page Brown, architect of considerable renown, has established a shop at 504 Sutter street and offers her services, in collaboration with architects and owners, for plans, suggestions, the designing of decorative furniture and the selection of interiors, lamps, shades, garden pottery and accessories.

Mrs. McAfee studied in the New York School of Applied Arts, and served with several of the New York houses engaged in home decoration. She was in France studying at the time of the war, but came home at the outbreak of hostilities. Last September she was married to Harry McAfee, a young architect, formerly in Louis P. Hobart's office, who will have his offices in the same building as the studio.

There are some original designs in furniture, lamp shades and bookrests in the shop, along with several splendid pieces of pottery from the Gladding, McBean Company, for whom Mrs. McAfee is agent. Furniture and pottery are made up according to the designs which Mrs. McAfee draws and submits to the purchaser. Most of the pottery is from the Lincoln Works of Gladding, McBean & Co.

The shop invites repose by its air of quiet refinement. Its placid gray walls, with a suggestion of deep turquoise blue here and there, and occasionally a glint of sunny yellow, are restful to the extreme. Here and there are lovely pieces of furniture, some that Mrs. McAfee designed, others imported or made elsewhere. But for all this, everything seems assembled together with such good taste that it seems especially designed to be a pleasant neighbor to everything else in the big room.

PLANT OF THE GRANT ROCK AND GRAVEL COMPANY ON THE SAN JOAQUIN RIVER,

Secures Big Orders for Gravel and Rock

The popularity of reinforced concrete for road and bridge work has made a profitable market for the various aggregates of this material, including cement, crushed rock and gravel and sand. One of the largest rock and gravel plants outside of those close to San Francisco is the one at Fryant on the San Joaquin river, about twenty miles from Fresno, owned and operated by the Grant Rock and Gravel Company, with head offices in the Cory building, Fresno. This plant has been in operation since September and has enjoyed exceptional prosperity in that period. Its capacity is thirty cars of crushed and washed gravel a day. The material is furnished in various grades to suit the buyer, whether it be for road work, bridge work or buildings.

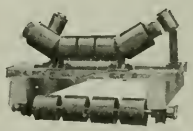
The accompanying panoramic view will give the reader some idea of the immense capacity and possibilities of this plant. It covers more than 1200 acres. The storage capacity alone is 700 cars. Material is shipped to any point in the San Joaquin Valley, from Turlock to Bakersfield and to all west side points.

Among the large contracts now being filled by the company is an order for 300,000 tons of gravel for the Kings county highway work. This is equivalent to 6000 cars. Grant gravel is also being used on all the State highway work in the county and on the Fresno State Normal School, the Phelan garage and the Olander building, Fresno.

Johnson Service for New Wheeler Hall

The new Benjamin Ide Wheeler hall, now under construction at the University of California, Berkeley, and said to be the largest collegiate classroom building in the world, will be equipped with the Johnson thermostat system of temperature regulation. There will be 105 thermostats, 103 mixing dampers and 38 coil valves, besides an electric compressor for the generating plant. This will be one of the largest installations of temperature regulators on the Pacific Coast.

DON'T YOU THINK that



CONVEYING, ELEVATING, SCREENING & MECHANICAL POWER TRANSMITTING

MACHINERY

built by a concern that has specialized for thirty-five years in this particular line ought to be pretty near ***RIGHT?***

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Meese & Gottfried Company

ENGINEERS & MANUFACTURERS

SAN FRANCISCO LOS ANGELES
PORTLAND SEATTLE

NEAR FRESNO, CAL. TWELVE HUNDRED ACRES WITH CAPACITY OF THIRTY CARS DAILY

U. S. Metal Products Co. to Build Los Angeles Plant

The U. S. Metal Products Co., San Francisco and Los Angeles, have secured an option on a three-acre site in the Vernon industrial district, where they expect to have work begun within a short time on a large plant for the manufacture of a still more extensive line of metal building materials than heretofore. Since establishing the Los Angeles plant a few years ago the company has been furnishing various classes of sheet metal work, fireproof doors and windows, the patented Simplex reversible windows, etc.

In the new plant the company will branch out into the manufacture of steel sash, hollow metal trim and doors, steel rolling doors, steel shelving and hollow metal furniture finished in baked enamel. The buildings will be the modern California type of factory construction with concrete walls to window sills and corrugated iron above, with corrugated iron saw-tooth roofs.

S. W. Band Keeps Busy.

Among recent plumbing contracts executed by S. W. Band, 580 Valencia street, San Francisco, are the following: Romona Hotel building, Smith & Stewart, architects; Adair Apartments, J. R. Miller, architect; city fire house, Drumm and Clay streets, Ward & Blohme, architects; remodeling of Commercial Club, W. H. Ratcliff, Jr., architect; residences at Sea Cliff and Ashbury Terrace for S. A. Born Building Company; S. F. Levi & Pilger Apartments, M. Lichtenstein, architect; J. H. Garrett Apartments, Mooser & Schumacher, architects; S. F. Ford Motor Company garage, J. Graham of Seattle, architect; Bibbero Apartments, B. J. Joseph, architect, and the C. C. Knickerbocker Apartments, Rousseau & Rousseau, architects.

Mr. Band is now combining heating with plumbing and will be glad to figure on contracts in either or both lines for work of medium or large size.

HERCULES INTERLOCKING TILE

Build for

STRENGTH PERMANENCY BEAUTY

GET MAXIMUM RESULTS AT MINIMUM COST

A wall that will stand forever — the wall built of "HERCULES" Interlocked Hollow Terra Cotta Tile.

A Post Card will bring full particulars.

PRATT BUILDING MATERIAL CO.

C. F. PRATT, President

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Hauser Reversible Windows

Protected by U. S. Patent No. 1,114,260

NO WEIGHTS NO CORDS

Manufactured in Wood and Metal Stock Lip Sashes Used.
Simple Frame Construction Reducing Cost.
Guaranteed Rain and Dust Proof.
Installed Easily.

Visit our office and inspect them

HAUSER REVERSIBLE WINDOW CO.

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DIGNITY and QUIETNESS

WERE THE PRIME CONSIDERATIONS WHEN THE ARCHITECTS, MESSRS. BAKEWELL & BROWN, ADOPTED

NONPAREIL CORK TILING

for the floor of the COUNCIL CHAMBER
of the SAN FRANCISCO CITY HALL
to be furnished and installed by

DAVID E. KENNEDY INC.

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THE BINDING OF YOUR MAGAZINES
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for use on Buildings, Fittings, Furnishings, Textiles and Fabrics (including Theatres, Movies, Etc.). The ONLY Process which Absolutely and Permanently FIREPROOFS. Endorsed by Leading Fire Chiefs, Insurance Departments, Government Bureaus, Safety First Commissions, etc., etc. Used exclusively on all Panama-Pacific International Exposition Buildings. Call for Circulars and Demonstrations.

Guido Blenio Fireproofing Co., Inc.

RALPH H. MOORE, President and General Manager
Telephone Sutter 2416 Office: 605 SHARON BLDG., SAN FRANCISCO

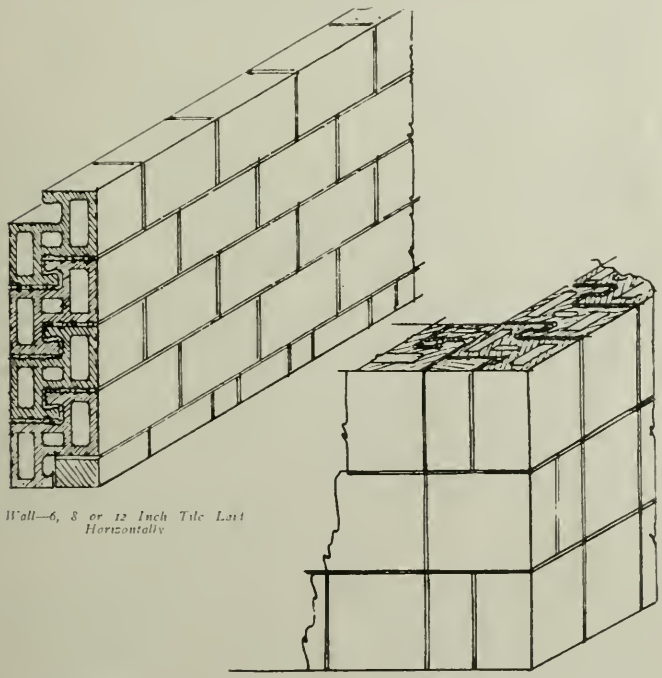
New Interlocking Hollow Tile for Pacific Coast Market

Pratt Building Material Company, 204 Hearst Building, San Francisco, has secured the Northern California agency for Hercules interlocking terra cotta tile, especially adapted for all wall construction. The Hercules tile are made from selected clays, thoroughly burned and of uniform sustaining quality. Speaking of the merits of Hercules tile, Clarence F. Pratt, president of the Pratt Building Material Company, says:

"'Hercules' interlocking hollow terra cotta tile stand for safe construction by the advanced use of clay products, the most durable, adaptable and fire-resisting material known, and furthers the art of building for beauty, stability and comfort at a minimum cost for the results obtained.

"'Hercules' interlocking tile are so constructed that when laid in a wall with other units of a like form, the resulting wall structure will be thoroughly bonded with all joints broken and form, when so laid, a continuous integral wall structure. The bond is formed by the overlapping and interlocking of the material of which the tiles are themselves composed, being independent of any other tie or bond, except the mortar which is used to place same in alinement and fill joints.

"'Hercules' interlocking hollow terra cotta tile are so designed that, however laid in the wall, all members composing same are in continuous bearing relation and alinement. Each tile has different beds and interlocks with four other tile



Wall—6, 8 or 12 Inch Tile Laid Horizontally

Corner of Wall—Tile Laid Vertically

The consequent distribution of stress increases the resistance and strength of the entire wall structure. Each mortar joint is interrupted in the center of the wall by the interlocking means provided. Behind this broken joint occurs a hollow space, which insulates and protects the interior against the elements. All members are likewise protected, affording complete insulation.

"The qualities essential to good construction are safety, durability, beauty

T. H. MEEK COMPANY
Manufacturers of HIGH CLASS
Office and Salesrooms 1130 Mission Street, SAN FRANCISCO Factory, 239 – 7th St.
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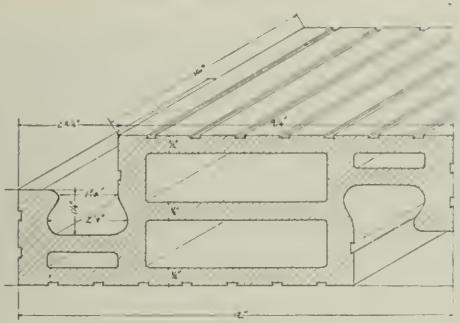


Four-Inch Partition Tile—Quarter Scale Detail Hercules Interlocking Terra Cotta Tile.

and economy. 'Hercules' interlocking hollow tile incorporate these necessary factors in a most efficient manner.

"The strength of the wall depends on the strength of the units and the manner in which they are bonded. The 'Hercules' interlocking hollow wall is strong because all materials used in its construction are strong and internally bonded. Necessary strength is obtained with the elimination of unnecessary materials and the additional advantage of a completely insulated hollow wall.

"Beauty in a structure is the proper combination of material, form and color. 'Hercules' interlocking hollow tile form a natural, well-proportioned unit for the accomplishment of structural art, offering innumerable methods of making a wall beautiful in design and effect. Facing clays of various colors and finish may be used for the exterior or it may be plastered and the surface made plain or blocked.

"Considering the artistic desire of the architect, the strength demanded by the engineer, the practical requirements of the contractor and workmen, the needs of the owner and occupant, together with restricted cost, this is one type of wall that complies with all requirements.

"Economy resulting from the use of 'Hercules' interlocking hollow blocks in buildings is the elimination of cost, due to furring or waterproofing, heat radiation of walls, cost of material and labor, and in steel-frame buildings a saving in the weight of necessary steel. The mortar required is approximately 33 per cent of that required for brick construction. Economy in building construction is not a matter of first cost. A building is economical in which the total sum of depreciation, insurance and maintenance is lowest for the results to be obtained. The first cost of 'Hercules' interlocking tile construction is low, the maintenance and depreciation practically nil and insurance a minimum.

"'Hercules' interlocking terra cotta hollow tile are designed of such size as to afford the one hand operation, permitting the workmen to pick up and place the unit, leaving the other hand to handle the trowel, line or level. This increases the rapidity of construction."

Sacramento Adopts City Plan

The City Commissioners of Sacramento have unanimously adopted the city plan drawn by Dr. Nolen. A few years ago there was so little sentiment in favor of city planning in Sacramento that the City Commissioners refused to make a donation of even twenty-five dollars toward the fund to bring Dr. Hegemann from Germany. The work which has just been completed by Dr. Nolen at municipal expense required an appropriation of several thousand dollars.

Speaking of the Commissioners' action, C. M. Goethe of the Chamber of Commerce said:

The adoption of the plan has disposed of factory site disputes for all time. This is justice to the home owner, and at the same time ends the discouragement of new factories. These can now build securely, and without months of begging.

The Commissioners have voted Sacramento into front place among American cities. They have given her the best kind of preparedness in that competition between communities, which is becoming as keen as that between business houses. The future saving to taxpayers in anticipating and preventing trouble can hardly be estimated.

The movement which culminated in yesterday's victory was begun by the Woman's Council in bringing to Sacramento for a course of lectures Professor Charles Zueblin. Following his final talk on another capital city—Harrisburg—a group of business men organized to have Charles Mulford Robinson make the first survey. His report resulted in the Chamber of Commerce negotiations with Dr. Werner Hegemann, who first called Sacramento's attention to her opportunity to become a great inland seaport.

The plan is elastic. It is not intended to overload the taxpayer, already groaning under a heavy burden. It is made to save money for all time. It represents an ideal toward which the city can work. Every city planner, Zueblin, Robinson, Hegemann, Nolen, has said that Sacramento lacks only hills. That with its two rivers and the Bret Harte country, rich in folk lore, stretching around it like a crescent, we will have in time a city than which none will be more beautiful.

SECTION OF FRIEZE OF MANTEL FOR MR. DANIELS' RESIDENCE
Philip Overman, Architect

Notable Architectural Sculpturing

The Sculptor's Work Shop (S. Miletin, manager) at 1705 Harrison street, San Francisco, is engaged on some important pieces in marble, for the University of California, Berkeley. Other work of this concern which is deserving of recognition may be described as follows:

The figure work in marble for Bliss & Faville, architects, at the entrance to Masonic Temple, San Francisco.

Marble mantels for the new wing of the St. Francis Hotel, made for the McGilvray Stone Co.

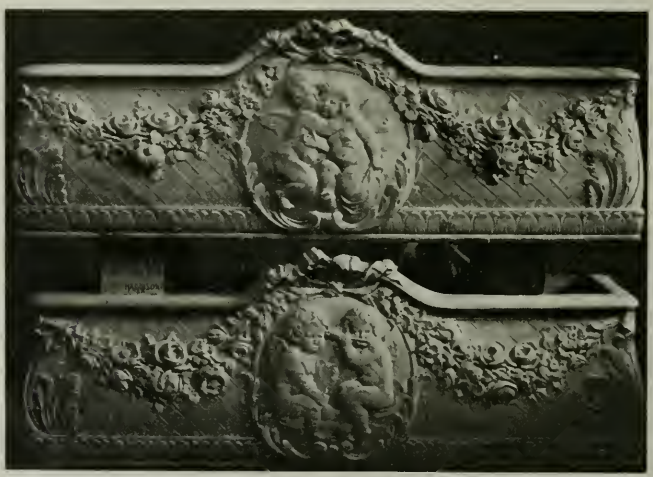
Immense marble mantel for the Morshead apartments, California street, San Francisco, Houghton Sawyer, architect.

All the marble mantels in Mrs. A. B. Spreckels' new residence.

Marble bust for the country place of Mrs. Scoffe.

Stone mantel, also fountain, for Mrs. Stearns' residence.

Mr. Miletin spent several years in New York studios, making a specialty of antique stone and marble mantels. He came to the Pacific Coast in 1911, establishing a modeling shop in San Francisco under the name of the Sculptor's Work Shop. Special attention is given the modeling of statuary, fountains, mantels,



FLOWER BOXES FOR MRS. A. B. SPRECKELS' RESIDENCE, SAN FRANCISCO

Marble Mantel in St. Francis Hotel

garden furniture, etc., in marble, stone or imitation stone. Among the architects for whom the firm has executed orders may be mentioned Willis Polk &

Mantel in Living Room of Mrs. A. B. Spreckels' Residence

Co., Woolett & Woolett, Bliss & Faville, Houghton Sawyer, and Miss Julia Morgan, all of San Francisco.

Keon Stone Mantel by Sculptor's Work Shop

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Nason's Opaque Flat Finish is sanitary, and in case the surface becomes soiled it is readily cleaned by the ordinary washing process. It is a superior undercoat for enamels, as it dries hard and firm and sustains the finishing gloss enamel coat perfectly.

This finish has been used with considerable success on all the upper floors of the twelve-story Wilkshire Hotel on Stockton, between Post and Sutter streets, San Francisco, McDonald & Applegarth, architects. It has also been used in the Children's Hospital, City and County Hospital, the Christiana building and a number of apartment houses in San Francisco and the Bay cities.

T. H. Meek Company in Permanent Warerooms

Following the fire T. H. Meek Company opened temporary offices, from which they have now removed to permanent quarters at 1132 Mission street, San Francisco. They will carry a full line of store and office fixtures, billiard tables of their own manufacture and billiard supplies. They are the only home industry concern making billiard tables complete.

They will continue their contracting department for bank, store and office fittings and are prepared to quote the old-time low price (the lowest consistent with good work) and no job is too big for them to handle.

Will Exhibit Work in the East

Myron Hunt, the Los Angeles architect, has forwarded some twenty-five pictures of his work to Chicago for hanging at the architectural exhibition to be held there. Mr. Hunt's showing in the Chicago exhibition will include pictures which formed a part of his excellent display at the recent Los Angeles architectural exhibition.

Back Numbers Wanted

The publishers will pay 50 cents apiece for one copy of The Architect and Engineer, December, 1905, and March, 1905.

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APRIL · 1916

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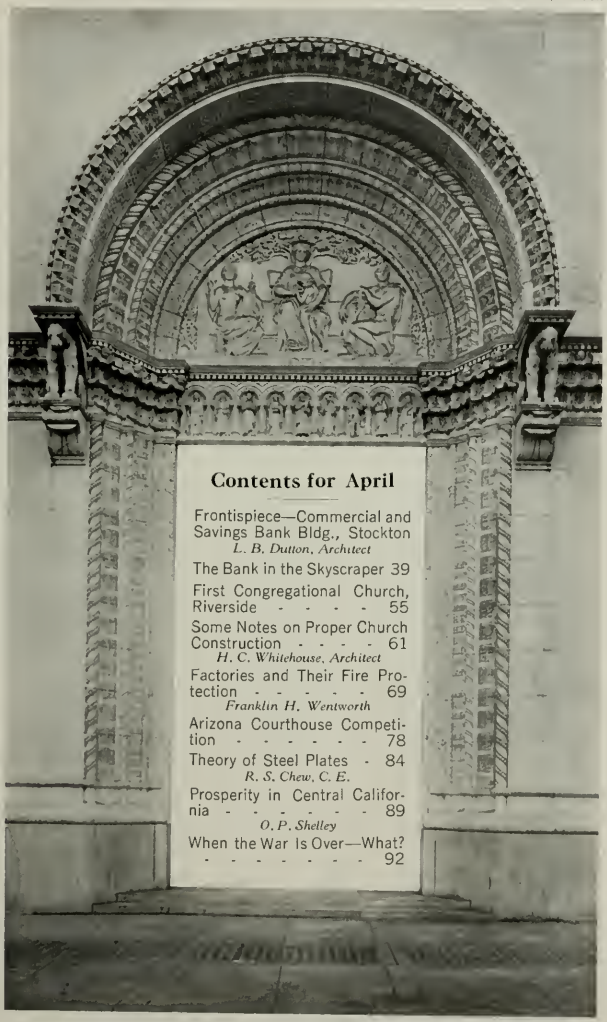

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THE ARCHITECT AND ENGINEER
OF CALIFORNIA

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Vol. XLV. No. 1

Issued monthly in the interest of Architects, Structural Engineers, Contractors and the Allied Trades of the Pacific Coast
Entered at San Francisco Post Office as Second Class Matter

COMMERCIAL AND SAVINGS BANK BUILDING, STOCKTON, CALIFORNIA
L. B. DUTTON, ARCHITECT *STONE & WRIGHT, ASSOCIATES*

Frontispiece
The Architect and Engineer
of California
For April, 1916

THE
Architect and Engineer
Of California

VOL. XLV APRIL, 1916 No. 1

The Bank in the Skyscraper*

First Trust Building, Oakland
L. B. Dutton, Architect

THE value of the tall piles we know as skyscrapers is no longer questioned. Bearing the name of the banks occupying the first or the first two stories, these inspiring structures, piercing the very clouds, bring to those institutions an enviable prestige.

California banking institutions which have experimented with the combination bank and office building are unanimous in agreeing that the investment has proved satisfactory in every particular. This cannot be said of the single story, highly ornamental bank building, which receives no income whatever from its investment.

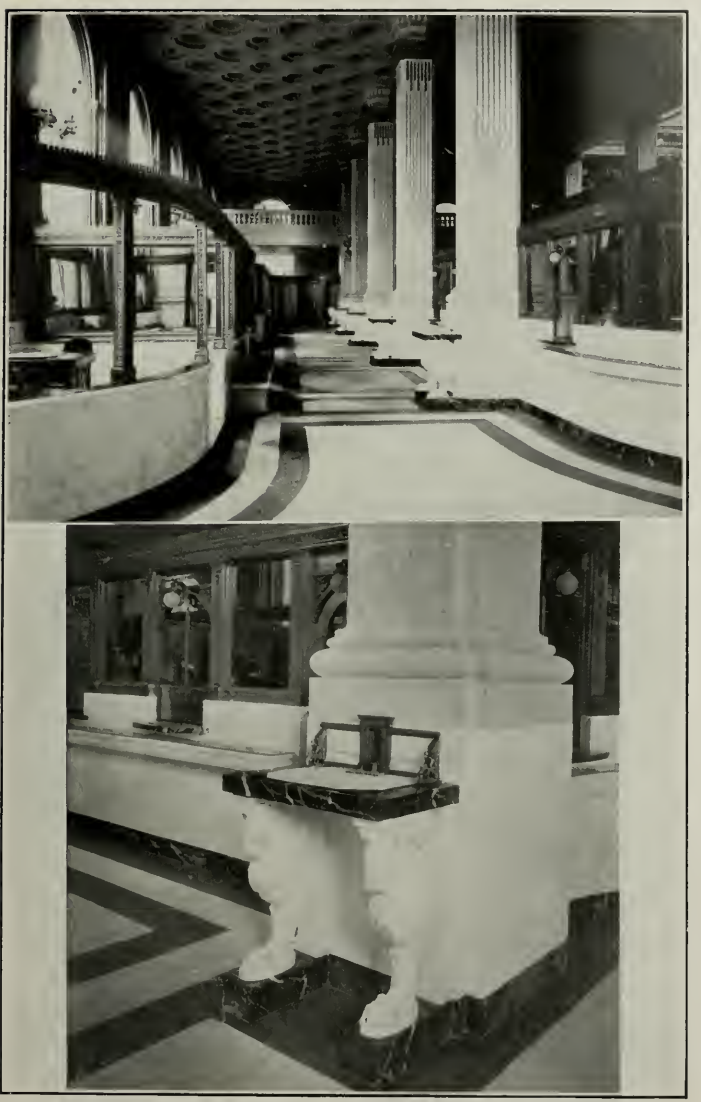
It is from the investment standpoint exclusively that the combination bank and office building is proving most attractive. An office building properly executed and in a desirable location is bound to pay a splendid return. This is particularly true in medium sized cities, like Sacramento, San Jose, Oakland and Stockton. Here ground values have not become so high as to make the relation between the value of site and the cost of the structure disproportionate. No office building, where proper consideration has been given to the manifold details of the proposition, should pay less than a 5% return on the investment, and many of them pay as high as 15% and 20%.

The location of the building, the planning and the cost are the all-important elements. In the planning, both as to the bank interior and the office rooms above, too much care cannot be given. A poorly planned office building is foredoomed to failure. A bank building may be most impressive in appearance, yet possess faults of arrangement which cause permanent inconvenience to its occupants. A banking room, too, is primarily a place in which to transact business, and secondarily an object for admiration, so it is evident that the inside layout and arrangement must be considered first.

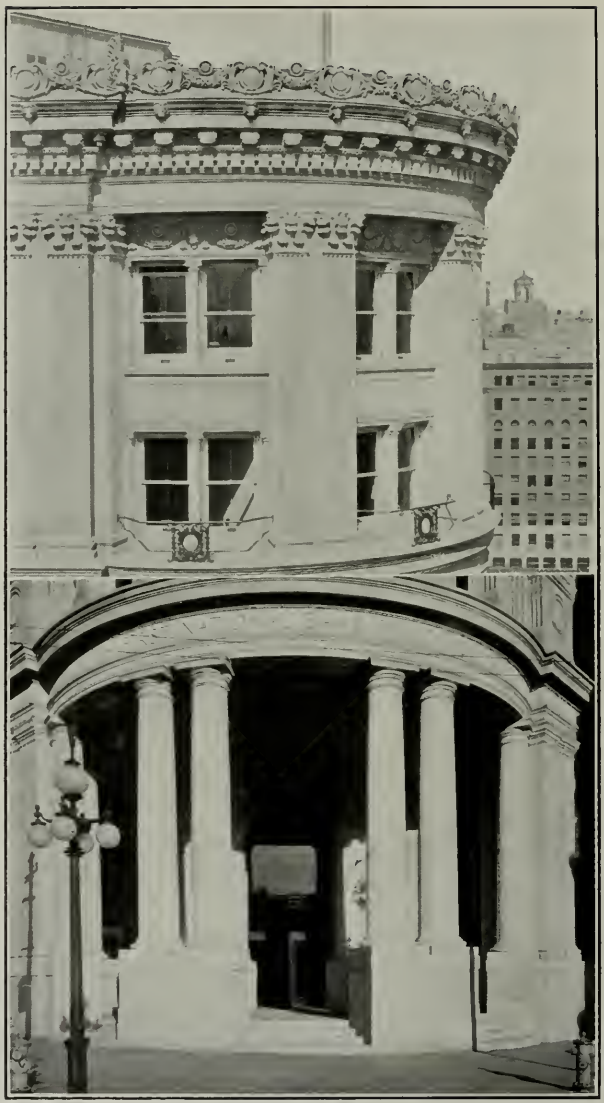
The advantage of a high-priced, prominent corner lot upon which to build a bank is generally appreciated. The cost, however, frequently places a fixed charge on it for ground rent which practically precludes an individual bank building, owing to the excessive rental that would be necessary. An office building, income-producing, relieves the bank of the

*In a subsequent number Architect Charles Peter Weeks of San Francisco will write about the one-story monumental bank building. Some of the more pretentious structures of this character erected on the Pacific Coast in recent years will be shown.

FIRST NATIONAL BANK BUILDING, SAN FRANCISCO
WILLIS POLK & COMPANY, ARCHITECTS



PUBLIC LOBBY, MAIN BANKING ROOM AND CHECK DESK, FIRST NATIONAL BANK BLDG. SAN FRANCISCO



DETAILS OF CORNICE AND ENTRANCE, FIRST NATIONAL BANK BLDG., SAN FRANCISCO

FIRST NATIONAL BANK BUILDING, OAKLAND
L. B. DUTTON, ARCHITECT

HUMBOLDT BANK BUILDING, SAN FRANCISCO
MEYER & O'BRIEN, ARCHITECTS
One of the first tall bank and office buildings to be occupied after the fire

SECURITY BANK BUILDING, OAKLAND
FREDERICK H. MEYER, ARCHITECT

INVESTMENT BUILDING, LOS ANGELES
ERNEST McCONNELL, ARCHITECT

UNION TRUST BUILDING, LOS ANGELES
PARKINSON & BERGSTROM, ARCHITECTS
One of the first tall bank and office buildings to be erected in the Southern California city

OAKLAND BANK OF SAVINGS, OAKLAND
DICKEY & REED, ARCHITECTS

CAPITAL NATIONAL BANK, SACRAMENTO
R. A. HEROLD, ARCHITECT
Exterior of granite glazed terra cotta by Steiger Terra Cotta and Pottery Works

FIRST NATIONAL BANK BUILDING, SAN JOSE
L. B. Dutton, Architect

MISSION SAVINGS BANK BUILDING, SAN FRANCISCO
Crim & Scott, Architects

BERKELEY NATIONAL BANK BUILDING, BERKELEY
JOHN GALEN HOWARD, ARCHITECT

POPULAR HEIGHT FOR BANK BUILDING IN CITIES UNDER 100,000 POPULATION

HOME OF THE FARMERS AND MECHANICS SAVINGS BANK, SACRAMENTO
Charles S. Kaiser, Architect

prohibitive rental that would be called for by an individual structure, and helps to defray the expense of the rental for the space occupied in the sky-scraper. Often a bank has trouble in financing an operation of this kind, and it becomes necessary to form a holding company to carry the property. This alternative is generally far from advantageous.

An organization known as the Bankers Lease Company has been formed recently in the East that is furthering a feasible plan for financing bank buildings. Through this organization a bank may secure any site it desires, have a modern building erected to suit its growing requirements for years to come, and all without putting any of its own capital into the project. Under this lease arrangement the rentals paid during the term of the lease convey to the bank the title to the property, free and clear, at the expiration of the lease. In other words, the bank moves into a building put up to meet its special needs, pays a fair rental for a stipulated term of years and becomes the owner of the property at the end of that time.

FIRST CONGREGATIONAL CHURCH, RIVERSIDE
MYRON HUNT, ARCHITECT

The First Congregational Church, Riverside, and Other California Edifices

THE accompanying photographic plates show some very satisfactory examples of ecclesiastical architecture in Southern California. The first picture—the First Congregational Church at Riverside—shows a truly picturesque design, with tower the predominating feature—a tower that smacks of the New England spirit combined with the traditional California mission feeling. The top of the cross on the tower is about 125 feet above the ground. This cross does not show on the detail, as it was an afterthought on the part of the committee of the church.

The design as illustrated, with slight modifications, was submitted in competition, which resulted in the selection of the architects for this church. There were but three competitors—the firm of Myron Hunt and Elmer Grey (now dissolved) being one.

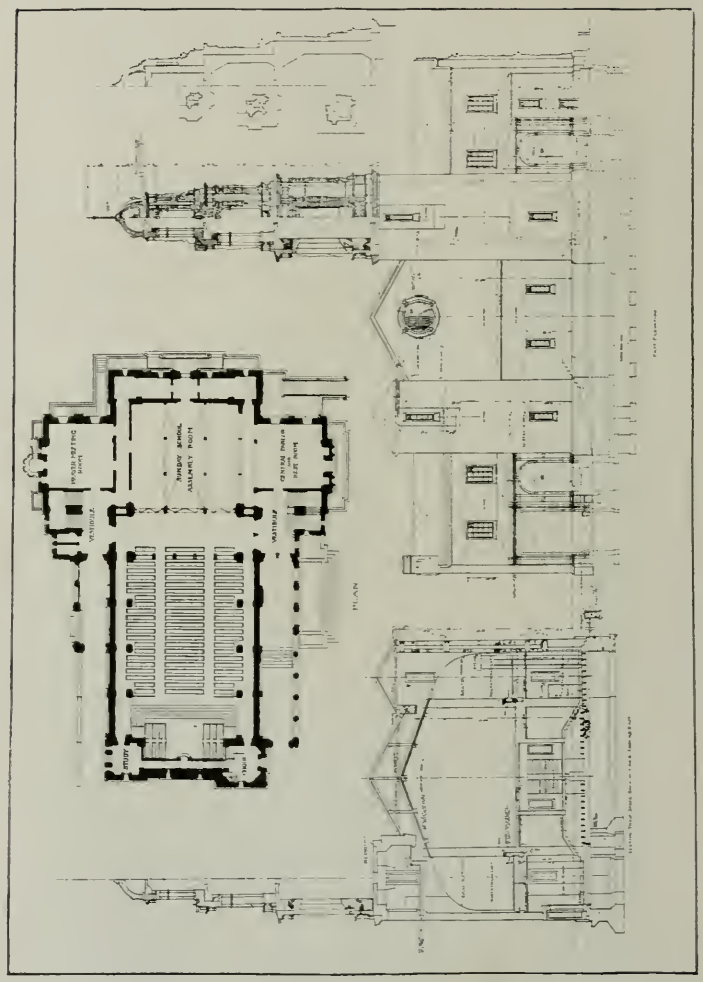
Between the time when these drawings were submitted in competition and the awarding of the commission, Mr. Hunt and Mr. Grey dissolved partnership, and the committee for the church placed the making of the working drawings and the erection of the building in the hands of Mr. Hunt.

The plan and general scheme of the church, which was Mr. Hunt's conception, have remained substantially unchanged. The problem, which resulted in the present plan, was to build a church and Sunday school which might at some future time be enlarged into a church solely. A cruciform church was decided upon, making the nave the present church, and so constructing the Sunday school part that the apse and portions of the transepts could in the future be added to the church, at which time it is contemplated the location of the pulpit would be reversed. The trusses of the roof over the apse are so located that the regular roof construction of the nave may be inserted between them.

The present Sunday school arrangements are provided by rooms looking into a court or well which occupies a part of the apse, and is lighted from above by skylights in the roof of the apse. It is possible to get twenty-four separate Sunday school units within the temporary arrangement, as well as an audience room large enough for the entire Sunday school, while the church and the Sunday school may be partly thrown together. This is done merely by folding wooden doors which form a part of the wainscot beneath the gallery at the back of the present church.

As will be noted by consulting the plan, the scheme is a broad nave with rudimentary aisles, which is elementary enough. There are, however, webs from each column of the outer wall, and the space normally occupied by flying buttresses in a clear story type of construction is kept within the room. The columns themselves are thicker than the web which connects from them to the outer wall.

A series of reflectors were placed vertically in the angle between this thin web and the thicker column. The light is thrown from the reflector upon the outer wall, and thence is reflected back into the room. The construction is such that neither the congregation nor the minister can see the source of light. It is particularly satisfactory to have been able to light the church adequately without having any glare in the eyes of the congregation, but to have kept all glare from the choir and the minister is a further advantage.



SECTION, ELEVATION AND FLOOR PLAN, FIRST CONGREGATIONAL CHURCH, RIVERSIDE
MYRON HUNT, ARCHITECT

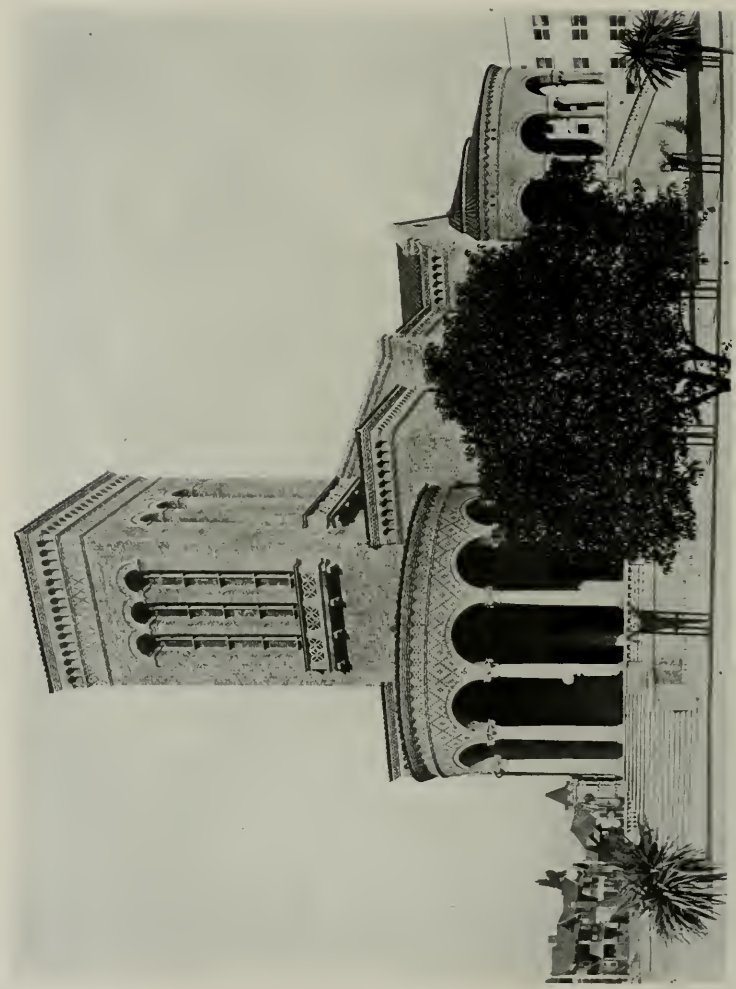
ANOTHER VIEW OF FIRST CONGREGATIONAL CHURCH, RIVERSIDE
Myron Hunt, Architect

This using reflected light on the walls, instead of on the ceiling, as is usual with modern indirect lighting, has made it possible to retain a timber construction in the roof, and to keep the woodwork of the pews and wainscot dark without loss in actual effect of light in the room.

The church is located on a carline, and an effort has been made to make it proof against outdoor noises. As a result of this construction, on the day of the dedication of the church a house burned down across the street, and the audience did not hear the fire engines. The walls

TRINITY CHURCH, SANTA BARBARA (FROM SOUTHEAST)
P. H. PROHMAN & H. H. MARTIN, ARCHITECTS

TRINITY CHURCH, SANTA BARBARA (INTERIOR LOOKING EAST)
P. H. FROHMAN & H. H. MARTIN, ARCHITECTS



FIRST CHURCH OF CHRIST, SCIENTIST, LOS ANGELES
ELMER GREY, ARCHITECT

are two feet thick, a double eight-inch wall with an eight-inch air space connected by webs. The piers are of brick. Reinforced concrete continuous bond stones tie the structure together.

Trinity Church, Santa Barbara, shown in a full page plate, is an excellent example of Gothic design. The architects are Messrs. P. H. Frohman and H. H. Martin of Los Angeles.

In planning the First Church of Christ, Scientist, Los Angeles, Elmer Grey has followed a style in tapestry brick that is popular with the Christian Scientists throughout the country. Edgar A. Mathews has built two such edifices in San Francisco. All three designs are reminiscent of the earlier Christian churches of Italy.

* * *

Some Notes on Proper Church Construction

By H. C. WHITEHOUSE, Architect*

BUILDING of churches is a subject upon which volumes might be written, especially if the experiences of church building committees, ministers, and the raising of funds are chronicled. It seems a stupendous task viewed from the start and so it is if we expect to accomplish it in a short time; but let us overcome this typical western disease of trying to do something grand in a great hurry, for surely anything well done is never done in haste.

Where we are to start, or where to end, in the choosing of materials of the church, would be difficult to decide. The choice of the material is not the all-important thing; it is rather the handling of the material. I believe that every material used should show plainly its kind, so far as possible, and be consistent and true in its use. I believe we should never incorporate into a church building a feature, either structural or decorative, that imitates another material. The church does not teach us to deceive God in our daily life; to be sure, we cannot; therefore it seems inconsistent to build falsely and at the same time to preach honesty. Why should we in our most important structure, the church, built and dedicated to God, seek means to deceive? To build for permanency, that is, with lasting materials, is so obviously advantageous, I believe, even to the layman, that it hardly seems necessary to argue its many advantages. Permanent materials, such as stone, hard brick, oak, copper, and other materials, used in their proper places, are always of the best and everlasting: expensive in the first cost to be sure, but cheaper in the end and cheaper in the maintenance of a building.

Let us recall for an instant some of the churches we have attended. How often do we see a pointed arch of Gothic built entirely of wood (embellished with countless jig-sawed ornaments) apparently supporting some balcony, organ or transept wall; it is plain even to the layman that such a thing in wood has no value structurally, its real strength being in the network of studding that lies hidden beneath the plastering. Therefore, it is false and meaningless. Suppose we remove the arch, take away the network of studding and allow the whole to rest on a simple wood beam and post—this would be consistent wood construction, and modestly decorated, would at least be honest, if not Gothic.

I have seen churches of concrete, where the walls are marked off in imitation of stone joints, and these were painted with some hideous color

*Hutton Building, Spokane, Washington.

TOWER, FIRST CONGREGATIONAL CHURCH, POMONA
ROBERT H. ORR, ARCHITECT
FERDINAND DAVIS, ASSOCIATE

to imitate mortar. It seems strange how people can enjoy this false architecture, but nevertheless it is being practiced even in this day, and sad to say, it flourishes.

How often we see the interior of churches decorated with panels, picturing perhaps a stone arch or colonnade (like a theatre curtain) in perspective, with shadows painted in (I am not criticising the spirit of the wonderful church works of the early Italian masters), then to embellish it, a Biblical inscription is painted in. How can such a decoration be anything but cheap?

Looking back on the mediaeval churches, those grand Gothic works, the impression at once is that everything structural is so frank, honestly expressed, it shows itself plainly, every arch is real and is working, every buttress sustaining, and the whole structure seems alive. Many of the churches were most elaborate in detail. We cannot hope to build as elaborately today. There are many of the old works that are preserved to us that are not elaborate in detail, but their beauty lies almost wholly in their simplicity. Whether these churches were elaborate in decoration or not, in all cases the structural elements showed predominant and were genuine.

Of late years there has been an ever increasing demand among church organizations, when first they consult an architect, or a carpenter, which is sometimes the case, to ask for a design which is entirely new and up to date, in fact, something that is entirely different than anything in the city. The result is, they usually get it. This hankering for something picturesque has led to the creation of some remarkably startling designs; plans with no practical composition, the exteriors smeared over with meaningless towers, turrets, and gingerbread work, and the interiors equally as bad. Stonework is imitated by the plasterer's art, yes, even carving is imitated in plaster and then perhaps gilded or painted. Such a creation has no repose, unity, or dignity; it is merely a composition of architectural riot.

How false this spirit is, and what a poor substitute to erect as the earthly habitation of the living God! The churches of the Middle Ages were erected in a true spirit of worship toward the Master. With the laying of the cornerstone began a spirit of self-denial, devotion, and with it the hardest kind of labor. Treasures unlimited were lavished with gratitude and thanksgiving, in fact, nothing was too precious for the church.

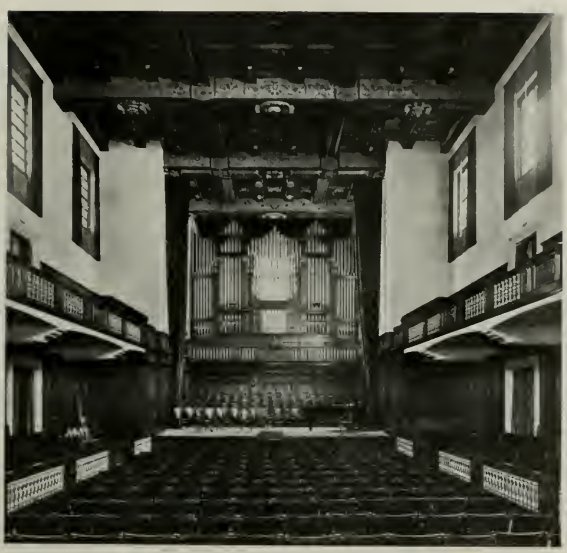
If this spirit, in a small measure, could be restored today, I am sure men would understand more clearly the error of the modern principles, and learn that cheapness, imitation, and pretenses could not be tolerated.

If a church is not honest in its design, its construction, and its decoration, it is nothing, and any added richness is only added shame.

One might ask: "Who is to blame for this condition? Why hasn't the church found a prevailing architecture that is expressive of its teachings?" I believe it rests almost entirely with the men behind the designs, mostly architects, and men who profess to be architects; the latter are the more guilty. These men, whether architects or "would-be" architects, fail to appreciate the possibilities of design when it comes to church building. I believe, too, that the man handling a church design should be wholly in sympathy with its teachings, otherwise he must fail to express in his work what the church really is.

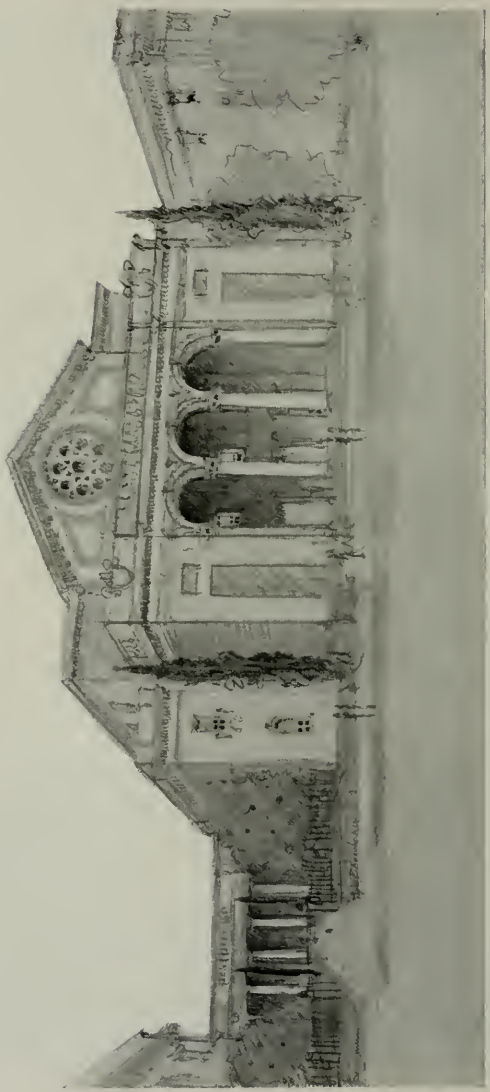
We cannot hope to equal the work of the old church builders in point of costly, elaborate decoration, stonework, and marvelous stained glass, but we can at least take place with it in point of honor.

MUSIC BUILDING, POMONA COLLEGE, CLAREMONT
MYRON HUNT, ARCHITECT



MUSIC BUILDING INTERIOR, POMONA COLLEGE, CLAREMONT
Myron Hunt, Architect

STUDY FOR A CHURCH, SAN FRANCISCO
Lewis P. Hobart, Architect



STUDY, FIRST CHURCH OF CHRIST, SCIENTIST, LONG BEACH
ELMER GREY, ARCHITECT

FIRST CHURCH OF CHRIST, SCIENTIST, LONG BEACH
Elmer Grey, Architect

The picture I have painted respecting church building as it exists in this day may seem too deplorable, but it is true, however, in the majority of cases. The current periodicals on recent architecture, as well as church magazines, are illustrating from time to time examples of ecclesiastical art that are extremely fine, but so many more that are not.

Looking at the other side of conditions, it is pretty safe to say that the day is here where there are great strides being taken toward the betterment of the art of ecclesiastical edifices. This art, like many of the others, is showing great progress, and after all it is interesting and wonderful to be living in such an age of advancement in art, to say nothing of science.

It must not be construed that this improvement has been spontaneous, for it has not. Take such works as Trinity in New York City, built some years ago, and the works of H. H. Richardson. The works of the latter were almost entirely Romanesque, the style which preceded the Gothic, to be sure, but it possessed a vigor and vitality that has never been equalled by any man working in the same style since. Sad to say, the spirit in the work of the style he started died with Richardson.

There are many good examples of work scattered here and there throughout the country, but they seem very few when compared with the countless numbers of poor examples that surround them.

* * *

Doors 700 Years Old

There was recently exhibited in New York City four door panels carved in Japan in the twelfth century, and which are said to have once adorned a Shinto shrine. The material of which they were made was Satsuma oak. The eight compartments were ornamented with Howo birds and cloud designs in relief, representing the four heavens.

SHOWING THE EFFICACY OF GOOD FIRE WALLS, METAL WINDOW FRAMES AND WIRE GLASS

Factories and Their Fire Protection*

A Tract for the Architect and Builder

By FRANKLIN H. WENTWORTH†

ARCHITECTS and builders are slowly entering into a new phase of their accountability. Just as the architect, whose primary impulse is that of the artist, has been compelled in the interest of his clients largely to master the technique of the builder, so both the architect and the builder are now being called upon to protect their clients in the matter of fire hazard. The enormous aggregate of the American fire waste, which contrasts us so unfavorably with European prudence, is beginning to cripple and impoverish us as the natural resources of the country, once believed to be inexhaustible, are ceasing to respond to the demands of our habitual extravagance. The common notion that the insurance companies pay the cost of fires is gradually giving way to an intelligent understanding of the fact that they are merely the collectors and distributors of the fire tax. They must recover from the public the sums they pay out in losses, plus the cost of conducting their business and a reasonable interest upon their capital. If they could not do this there would be no business of underwriting, and sufferers from fire would be relieved only by direct assessment upon their more fortunate neighbors. It is not certain that a year or two of such direct assessment would not be an admirable educative experiment. At present the cost of the fire tax is merged with everything we eat and drink and wear, and the masses of the people are ignorant of the fact that they bear it.

This is no longer true of the manufacturing classes, however. The manufacturer now realizes that he pays a tax directly related in amount to the character of the building he occupies and the nature of his manufacturing processes; and that in addition to this he pays for the carelessness of all his neighbors. If he cannot shift this burden by passing it along to the users of his product, merged quietly in the selling price of his goods, then he must pay it out of his profits, which cripples him in the competitive struggle

The manufacturer now clearly sees this and expects the architects and builders he may employ to see it also. If, after his factory is completed, he finds that points respecting the fire hazard have been ignored and that in consequence of some structural qualification, now too late to alter, he is doomed to pay a fire tax which forethought, with perhaps no additional expense, might have avoided, he may be considerably disturbed by it.

Oftentimes structural defects (not mechanical, but from the standpoint of fire hazard) or the unwise location of hazardous factory processes cannot be overcome by the addition of special fire protection after the completion of the building. In such cases these defects operate as a fixed charge upon the property and contents as long as the building stands.

Fire protection engineering is coming to be a profession by itself, but, after all, its chief distinguishing quality is common sense. The principal demand is that the architect and builder should have a consciousness of the fire hazard, for up to this time very few of them have thought much about it. With the thought of the importance of this item in their minds no grievous blundering is possible, and technical advice on specific features can generally be had without charge from fire protection engineers in the service of the various underwriters' inspection departments having jurisdiction.

*Drawings furnished by New England Factory Mutual Fire Insurance Companies.
†Secretary National Fire Protection Association.

A Successful Fire Stop.—Showing satisfactory fire retardant service of wired glass in metal window frames. Warehouse across twenty-foot alley was totally destroyed. Windows toward rear shown boarded up were broken when side wall of burning building fell.

It is the intent of this article to set out certain fundamental principles which may serve as a basis of approach for those who have as yet given no thought to the subject.

Experience in fire protection engineering suggests three points to be kept in mind in planning a factory:

1. There should be as little combustible material as possible used in its construction and equipment.
2. Each floor should be absolutely cut off from every other floor and each section from every other section, so that fire may not communicate.
3. Every part of the factory should be equipped with fire extinguishing apparatus.

It is obvious that a factory of reinforced concrete will present certain advantages respecting the fire hazard over the slow-burning or "mill con-

struction" type; although the latter is preferred by many manufacturers as presenting more convenient surfaces for the attachment of pulleys, shafting and machinery. Slow-burning construction is not undesirable if properly safeguarded and protected.

The advantages of the use of reinforced concrete appear when we consider that with such construction every floor may, by avoidance of vertical openings through it, be made practically a fire wall. The floors being incombustible, a fire in any story may be ordinarily confined to that story. In the old type of factory, having open elevator shafts and belt openings from floor to floor, fire quickly ran from story to story, and was soon beyond the control of the firemen. It is essential that in all factories, of whatever type of construction, stairs, elevator and belts be placed in fire proof enclosures with openings to each floor protected by fire doors or shutters. If in addition to the omission of all vertical openings provision be made to drain the floors through scuppers set into the outside walls, the possibility of water damage to goods or materials on floors below is much lessened. The standard form of brick or concrete stair and elevator tower may also serve this purpose. If the building as a whole is of fire-resistive material, it naturally presents less fuel upon which a fire may feed, and there is therefore less chance of a serious fire if for any reason the extinguishing agents are temporarily disabled. It must be remembered, however, that buildings are often destroyed by the burning of their combustible contents, and in all types of mills and factories the floor areas should be kept down to the minimum limit consonant with convenience and economic operation of the plant. These areas should be divided by fire walls, all openings in which should be protected by standard self-closing fire doors. These precautions minimize the danger of a rapid spread of fire horizontally. All mill-constructed buildings, if of large area, should be divided into sections by special fire walls extending above the roof and out beyond the walls of either side.

Whether exposed to possible fire from adjacent buildings or not, there should be no wooden frames or trim about the windows. Window frames should be of metal fitted with sashes of wired glass, for under strong draught fire frequently creeps up outside from story to story by means of the windows, consuming the wood trim and igniting contents of the building on each floor. Metal window frames are now so constructed that they will stand very considerable exposure to fire without buckling or releasing the glass, and their liberal use in all varieties of buildings is greatly to be desired. The sashes may be operated as conveniently as those of any other window.

It will be observed that all the suggestions made for fire walls, stair and elevator enclosures and window openings are as applicable to buildings of mill or slow-burning construction as to those of concrete. They should be followed, as far as possible, in all factory construction and in mercantile buildings as well.

In certain buildings of mill construction, carrying stocks of excessive weight, it has been a common practice to make the main beams of two pieces of timber side by side, bolted together. An air space between the pieces was formerly advocated in behalf of better seasoning and possible avoidance of dry rot. Experience has demonstrated, however, that this space not only reduces the resistance of the beams to fire by offering almost double the wooden surface to its attack, but that in case of fire getting started the space between the beams holds it for a long time and prevents its extinction. The

A Standard Fire Door.—In a large paper warehouse in which everything in one section was destroyed by fire, a line of standard tin-clad fire doors effectively protected all stories of the adjoining section. The accompanying photograph shows one of the doors. Self-releasing timbers saved the walls from wreck, and the doors kept the fire in the burning section. Note the integrity of the standard hardware and the unwarped body of the door due to its well selected lumber and proper nailing. Nothing happened to it but the bite the fire took out of the core exposed in the little round gas-vent.

photograph on page 73 shows a collapse of such double beams, which are not so severely burned but they might have held had they been one solid timber, or had the two pieces been bolted tightly together. It is obvious that neither automatic sprinklers nor ordinary hose-streams can successfully reach fire lurking in such narrow alleys. Such construction should be avoided.

Mill or slow-burning construction presents its own inherent problems. Enough wood must be used to insure strength and stability, but superfluous wood should be avoided. It matters very much as to just how the quantity of timber used may be disposed. The guiding thought of the architect should be to present to fire attack the least practicable amount of wood surface.

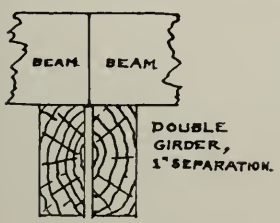
For example, a mill planned with heavy beams eight to eleven feet on centers of continuous spans from wall to post or post to post of from twenty to twenty-five feet is infinitely more desirable than one of miscalled mill construction having longitudinal girders resting upon posts on which girders are placed four feet or less on centers. The latter construction not only adds to the exposed wood surfaces which may be attacked by fire, but the disposal of the timbers obstructs the action of sprinklers and prevents the sweeping of hose streams from one side of the mill to the other.

No architect with the consciousness of the fire hazard will ever plan for either manufacturing or mercantile occupancy those undesirable fire boxes

known as "light-joisted" buildings. Light joists or rafters two or three inches in width, spaced from ten to sixteen inches on centers, ignite and burn like kindling. Their numerous corners furnish projections for easy ignition. The menace of such construction may be aggravated by sheathing under the joists. This provides a series of wooden cells, pervaded with concealed spaces in which fire may riot and lodge and dodge extinguishment until the floor or roof is burned through. By the same token partitions of light wood should be avoided.

Timber posts offer greater resistance to fire than wrought-iron, steel, or cast-iron pillars, and are preferable in mill construction. Experiments made for the Boston Manufacturers' Mutual Fire Insurance Company at the United States Arsenal at Watertown, Mass., show that sound timber posts of the proportion customarily used in mill work yield by direct crushing and not by crippling, the strength being directly as the area of cross section at the smallest part. The columns yielded at about four thousand five hundred pounds per square inch, confirming the general practice of allowing six hundred pounds per square inch as a safe load. Square columns are therefore one-fourth stronger than round ones of the same diameter, and do not encroach to any appreciable extent upon the floor space. It is the general practice to bore a hole one and one-half inches in diameter along the axis of the column to reduce checking. This should be done in any event, for if posts of unseasoned wood should by any chance be painted, varnished or filled, they are liable to be attacked by dry rot if unventilated. The National Fire Protection Association has published a report by one of its members, Prof. Ira H. Woolson, descriptive of the collapse of a building in New York City from this disease of fermentation of unseasoned posts. In

Double Beams and Fire



Undesirable Construction

Dry Rot in Timbers.—Shortly after the fire was under control the floors began to fall in irregular sections, and in two or three hours the whole floor system of the large building had fallen in a tangled mass to the basement. The reason of this collapse is indicated by the condition shown in timbers numbered 1 to 6.

machine shops and other plants requiring exceptionally heavy floor construction above the ground level, steel beams are frequently called into service. With these, if wide spacings of from seven to twelve and one-half feet are maintained, the advantages of standard mill construction are not forfeited if the steel members are suitably fire-proofed. Desired floor stiffness between beams may be secured by making floors of two-inch joists on edge spiked together, the thickness of the floors varying with the loads and span from five to eight inches or more. This floor being practically a single unit, provision must be made for longitudinal contraction by making a continuous joint in the under flooring at

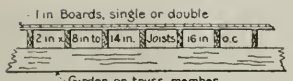


Fig. 1—Undesirable Construction. Note the large expanse of wooden surfaces exposed to fire and the fact that a slight fire which may burn no more than half inch from each side of the joists practically destroys their strength, whereas a similar fire burning under purlins or timbers illustrated in Figs. 2 and 3 may do but little injury to them.

intervals, with, of course, arrangement for tying the building together. One thickness of hard, close-grained floor boards laid over planks with two layers of resin-sized paper between is a good floor. A method that is growing in favor in high-class factories is to lay a board flooring diagonally or at right angles to the plank, and over that a top floor of birch or maple laid lengthwise. This intermediate floor gives great resistance to the lateral strain or vibration. It can be made of cheap lumber and in many factories is well worth the additional cost.

It is obvious that where steel beams or posts are used they should be properly protected. As steel or wrought iron, when heated, will fail by buckling or bending before an equivalent beam or post of wood will be dangerously affected, it is of importance that steel members essential to the stability of the structure be fireproofed; otherwise a fire in a lower story may bring down in wreck everything above it. Where steel beams support wooden floors they must

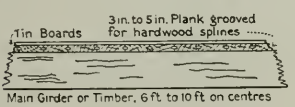


Fig. 2

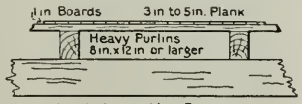


Fig. 3

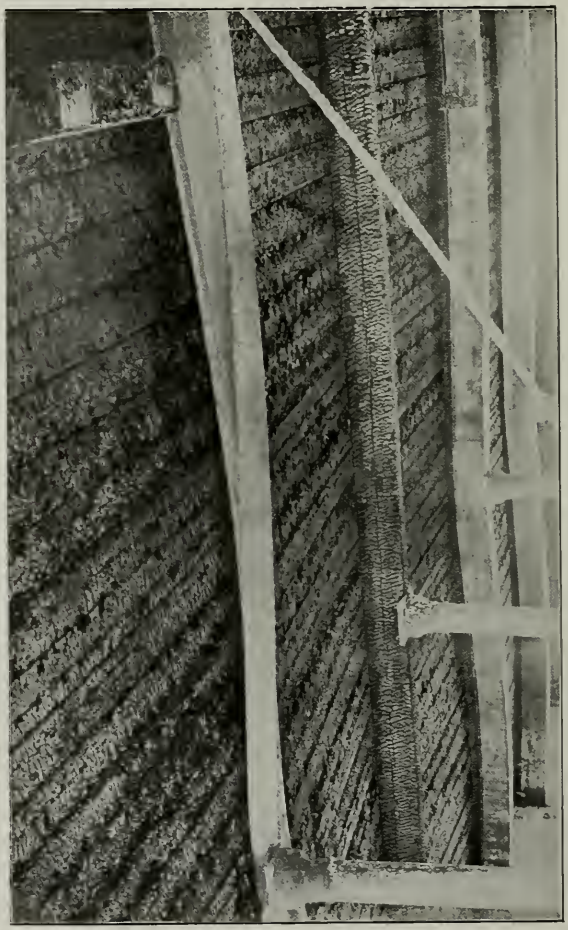
Good Types of Construction.—Fig. 2 illustrates plank directly on timbers or girders not usually over ten feet on center. Fig. 3 is a type where trusses, posts or girders are widely spaced, necessitating use of purlins to support planks. Note that an eight by twelve inch purlin has an equivalent amount of wood to six two by eight inch joists spaced as in Fig. 1, and that the latter expose 108 square inches of surface to a fire as compared with thirty-two square inches in the former.

be fireproofed if they are to resist fire as well as the floors. The accompanying cut gives in detail an inexpensive method of protecting steel beams, and this is also applicable to wrought iron or steel columns. A more substantial method is usually advisable for the latter, however, and protection against mechanical injury near the floor should be provided.

There is another matter which should never escape consideration in building a factory. This is the special fire hazards incident to the character of the factory product. The picker room of the cotton mill is a luminous example. Here fire frequently occurs from foreign substances striking the pickers and igniting, by the accompanying spark, the inflammable cotton. Sufficient statistics are now available on almost every well known manufacturing process to indicate just what elements in such process are especially susceptible to fire. Bulwarked by this knowledge, it is prudent to segregate from the principal values of the factory all special processes demonstrated by experience to be especially hazardous. This does not mean that such processes must be carried on in separate

1½ in.
Alternate Method.
Rods if used may be sharpened and driven and fastened with heavy staple
At least ¾ in of plaster outside the lath. 2 coat work
Between rods or channels wrap lower flange with piece of metal lath to provide ample thickness of plaster over flange
Floor Plank
Channel punched for 2 in. wire nails.
Metal lath to be well stapled on to the wood.
½ in rod or ¾ in. channel spaced every 18 in where beam is more than 10 in. deep.
Metal lath to be wired to channel or rod.
Can be cut away for hangers and pointed up after hangers are in place.

Suggestion for Fireproofing Steel Beams

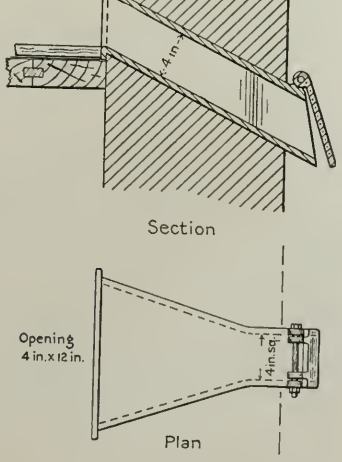


Wooden Timber vs. Unprotected Steel Beams. The stability of the single eight by ten inch wooden timber was not affected, although the ten inch steel beams sagged and were twisted to a degree which required rebuilding. The wooden beam was used because not enough steel had been ordered to complete the work promptly. In rebuilding, wooden beams were used throughout.

buildings at the cost of traveling time and inconvenience. The problem of segregation can now be met without shifting the process out of its logical place in the routine of manufacture. In a fireproofed factory only a separate room, or at best a separate floor is needed. The manufacturer who, once when he had a fire in some room where volatile oils, for example, were used, commonly lost half his plant, or at any rate so drenched his premises with water as to make a fortnight's suspension necessary, can now, if he likes, so dispose that hazard as to have a fire every other day without disturbing the other parts of the factory. The modern fireproof room equipped with automatic sprinklers, having a slightly pitched floor and scuppers at the walls, can be flooded for fire extinguishment without a drop coming through below. The water runs as harmlessly from it as from the deck of a ship.

In mill construction it is easy to fireproof the floors and ceilings of any room in which quick, flashy fires are liable to occur. In the picker rooms of cotton mills a similar protection to that above suggested for steel beams is often used, the metal lath being applied directly to the under side of the planking and around the beams.

With the general outline so far given for his guidance the architect or builder will have before him the main points in building construction for the protection of his clients respecting the fire hazard. A consciousness and proper consideration of them may save many dollars in insurance premiums, and at the same time provide an attractive risk that with suitable further protection can hardly under any circumstances prove a total loss. There remains, however, after observance of the points of construction, consideration of the fire extinguishing agencies. These may appear to be outside the proper province of the architect, but his knowledge of their character and importance will help vastly in the convenience of their installation, and a little preliminary thought about them may save much tearing out and minor reconstruction. The architects who led the van in providing shafts, channels and runways for electric wires before such conveniences were demanded by inspectors, saved their clients an incalculable amount of annoyance.



Detail of Scuppers

It is obvious to any well-informed person that the manufacturer who today builds without provision for automatic sprinkler protection almost wilfully endangers not only his plant, but the lives of his employees. It is not sufficient that the building be fireproofed. Fireproofed is but a relative term. Buildings of fireproof construction are often wrecked and ruined by the burning of their contents. Provision must be made for the extinguishment of a fire the moment it starts. Automatic sprinklers will do this if properly installed with an adequate water supply. Where a sprinkler system fails it will in almost every case be found to have been somehow

neglected previous to the fire. Automatic sprinklers, with their increasing adoption, have almost eliminated a kind of fire which used to be especially destructive; namely, explosions of gaseous products generated by previous slow and imperfect combustion in stock or goods. Automatic sprinkler protection should, therefore, be considered imperative and intelligently provided for, and all concealed spaces or places difficult to protect properly by such a system should be studiously avoided. Vast inconvenience may be obviated by architects and builders giving thought to this point. Ample water supply for the average factory demands two independent sources. One should be by gravity and of sufficient volume and pressure to afford a good supply until the secondary supply can be drawn upon. Pumps, tanks and other details are not within the scope of this article; nor are fire pails and hand chemical extinguishers which need no advance provision, being placed in any convenient or desirable location.

The architect should give thought to a stand-pipe system, however, in factories of three stories or higher. They are invaluable for carrying water for hose streams to upper floors, thus making unnecessary the handling of hose on ladders or on stairways, which is difficult and often entails costly delay. They should ordinarily be placed in the main stair towers, or at any rate on the opposite side of the wall from the rooms or buildings they are designed to protect. Where buildings are near enough to each other for the roofs to afford vantage points for use of hose streams, stand-pipes should be extended to supply roof hydrants.

In factories having loose combustible stock in process an equipment of small linen hose on each floor is invaluable. It is best to supply this from an independent system of small pipes. It may then be available in case water is temporarily shut off the sprinklers, or in final extinguishment of smouldering sparks after sprinklers have been shut off to save excessive water damage.

There are many other details to be considered in properly protecting a factory from fire, but they are details in which the fire protection engineer is not dependent upon the provision or co-operation of the architect. If the points touched upon in this article have been made clear enough to enable the architect or builder to gain a general survey of the responsibilities his clients are coming to impose upon him, the absence of technical instruction will not impair its value.

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The Arizona Court House Competition

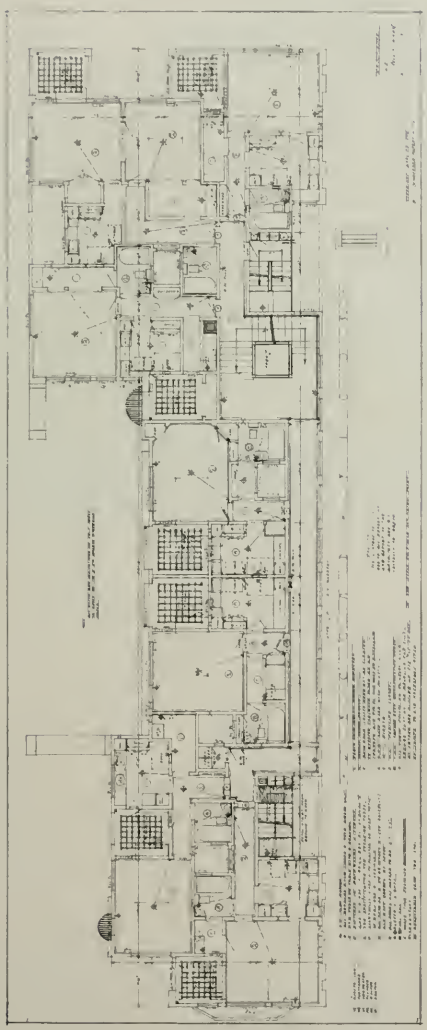
THE March number of The Architect and Engineer announced the winners of the Yavapai County Court House Competition, in Arizona. As stated, first prize was awarded to W. N. Bowman, architect, of Denver; second prize to Norman B. Coulter of San Francisco, and third prize to F. J. DeLongchamps of Reno, Nevada. Perspectives of all three plans are shown herewith. The successful design calls for a building 90x150 feet, with a basement story above ground and two full stories and a mezzanine floor. The interior walls and floor construction will be of reinforced concrete, with exterior of Prescott granite. There will be four main approaches to the building, one each to the north, east, south and west. All door and window trim will be of metal. The main corridors will have marble wainscoting, with tile floors. The courtroom floor will be laid with cork tile. The roof construction will be steel and tile, with copper cornice. The estimated cost of the building is $250,000. The three prizes were awarded in competition with drawings submitted by twenty other architects on the Pacific Coast and in the Middle West. The selection was made by the County Board of Supervisors. Although little more than a month has elapsed since selecting a design, the plans have been finished, figures have been taken from leading contractors and a contract for construction is expected to be awarded any day. This is certainly "going some," to use a favorite expression of the small boy.

YAVAPAI COUNTY COURT HOUSE, PRESCOTT, ARIZONA
Awarded First Prize *W. N. Bowman, Architect*

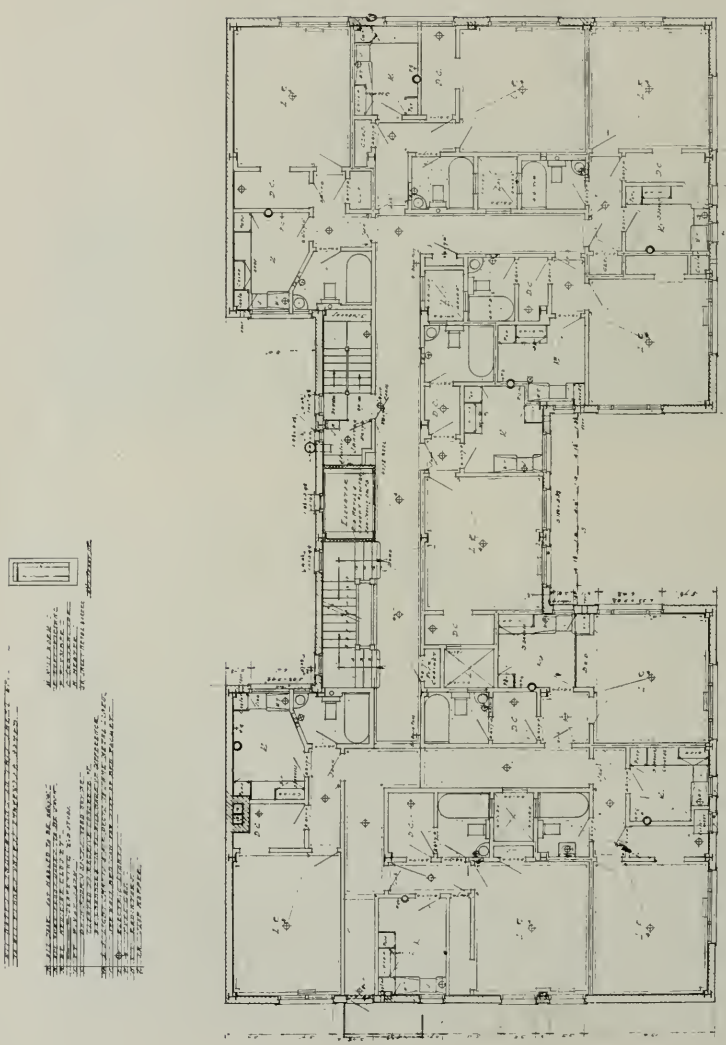
YAVAPAI COUNTY COURT HOUSE, PRESCOTT, ARIZONA
Awarded Second Prize *Norman R. Coulter, Architect*

YAVAPAI COUNTY COURT HOUSE, PRESCOTT, ARIZONA
Awarded Third Prize *F. J. De Longchamps, Architect*

OAK LODGE APARTMENTS, OAKLAND
Chas. W. McCall, Architect



TYPICAL FLOOR PLAN, OAK LODGE APARTMENTS
CHAS. W. McCALL,
ARCHITECT



FLOOR PLAN, CASTLEWOOD APARTMENTS, OAKLAND
CHAS. W. McCALL,
ARCHITECT

CASTLEWOOD APARTMENTS, OAKLAND *Chas. W. McCall, Architect*

Two Oakland Apartment Houses

THE two apartment houses shown on this and preceding pages were designed by Charles W. McCall, architect of Oakland. Both buildings are in that city, one occupying a splendid marine view site opposite Lake Merritt. This building is a rather free adaptation of the Southern Spanish style. The exterior is stucco. There are twenty-one apartments of two and three rooms each.

The other building is constructed of brick and contains a total of forty-seven apartments of two rooms each, with sleeping porches on the roof for the occupants of the top floor. Each sleeping porch has a private stairway. The equipment is most modern and includes a two-part heating system embodying hot water service, steam heat, and a garbage burner. The main rooms are finished in gum and the corridors in Port Orford cedar. The building cost approximately $75,000.

* * *

Suburban House Competition

A number of Los Angeles draftsmen will enter the White Pine Architectural competition for a suburban house and garage to cost $10,000. The competition closes May 1. Prizes are offered as follows: First, $750; second, $400; third, $250; fourth, $100. The program may be obtained on application to Russell F. Whitehead, 132 Madison avenue, New York City. Mr. Whitehead was formerly editor of the Architectural Record and the Brickbuilder.

PHOTOGRAPH OF PLATES TESTED BY THE UNIVERSITY OF CALIFORNIA

Theory of Steel Plates, Reinforced Concrete Floors, Suspension Bins and Domes

By R. S. CHEW, C. E., M. Am. Soc. C. E.

THE reader will, I hope, appreciate at once the void that these articles are intended to fill.

Probably no item of engineering construction is in such an ambiguous condition as our present theory of plates.

Before the introduction of reinforced concrete the plate was restricted to short spans and the thickness in these cases was guessed at or, at best, made to suit the practical experience of the designer. At any rate, the subject was not considered of sufficient practical importance to attract the attention of the practicing engineer.

The use of reinforced concrete, however, has made this subject one of primary interest to the engineer, for he is now called upon to explain the action of a plate under various conditions of support and loading. For instance, he must determine the stresses in

Plates supported on points (Girderless floors)
Plates supported on four sides
Plates supported on two sides.

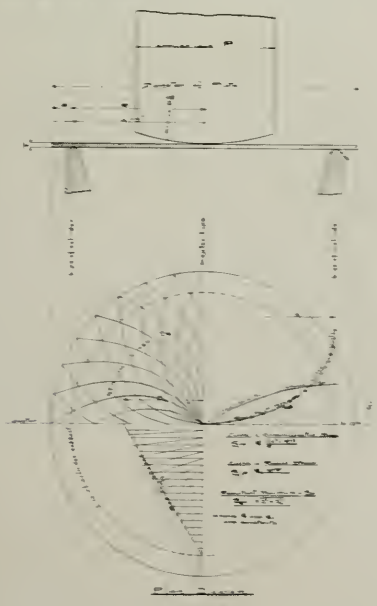
In addition to the above he is called upon to design plates in the shapes of domes.

In the endeavor to solve the above problems there have been a number of theories advanced, the majority being based on the theory of Grashof. The results have been, however, very unsatisfactory.

In order to illustrate the condition, let us consider the Grashof formula. For square plates supported on edges and carrying a uniform load this formula reads $S = \frac{3}{16}\frac{W}{T^2}$ which reduces to $W = 5.3\ ST^2$

where W the total load on plate
S the maximum unit fiber stress
T the thickness of plate.

For a total load W, then, this formula does not bring in the span as a factor, so that we get the condition that for a given load the strength of a plate is independent of its diameter or that a plate 60 feet square and $\frac{1}{8}$-inch thick is as strong and will carry the same total load as a plate 6 inches square and $\frac{1}{8}$-inch thick.



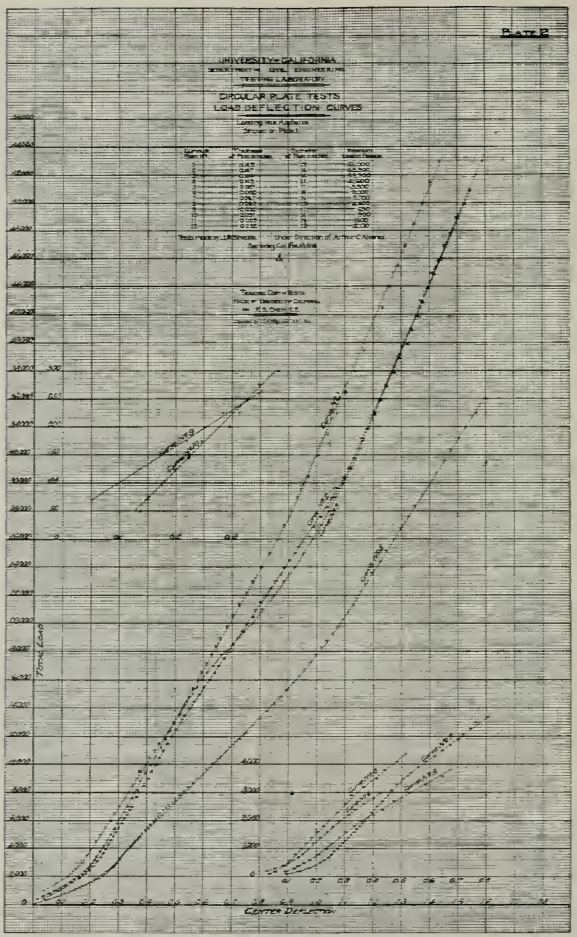


Plate 2

This, of course, is untenable, but it is the result derived from endeavoring to figure the plate as made up of a number of beams.

The writer will give in these articles a rational theory that is a radical departure from the beam theory. His theory is based on the elastic action of a plate under load.

The theory in question has been tested in various ways and in each case has indicated closely the actual existing condition, for instance: In the plates tested at the University of California, it was found that the strain

lines were pronounced and curved in direction. This curvature indicates two stresses at right angles to each other and of varying intensity. On Plate 1 we have plotted the resultant curve of the radial and circumferential stresses as derived from the formulae and the result seems to agree closely with the strain lines in the plate.

Under the treatment of domes our formula indicates the curve of maximum efficiency for a dome under distributed load. This formula is not exact, as the distribution of the load has been assumed as triangular, whereas in a curved dome the loading diagram would depart slightly from the triangular shape. However, using the formula as it stands, it will be found that it is in close accord with the curve of the egg, which is recognized as the efficient dome curve.

Another interesting feature is the effect of overhang. As far as the writer has been able to determine, this effect has heretofore never been considered in any of the plate theories, and yet we find that its influence on a plate is considerable.

This effect of the overhang proves the basic assumptions of this theory; for in no way can this increased stiffness or strength be accounted for other than by a horizontal resistance acting around the vertical axis of the plate.

Do we gain anything by restraining the edges of a plate? This question has been repeatedly asked. The answer is given in this theory.

The formulae in this theory do not indicate that a supported plate is stronger than a plate fixed at edges; but do show that a plate of the ratio of radius to thickness as given, and fixed at edges, will yield or fail locally until it assumes the position of a supported plate. At this time it will apparently increase in resistance, due to the fact that it is acting as supported at the edges. It must be borne in mind, however, that this is true only for this ratio of radius to thickness and ratios above this; for all ratios below this the condition will not hold, as the reduction factor enters and the relative strengths of the fixed and supported plates will be determined by the formulae for thick plates.

We can thus appreciate why there is no gain in bolting down the edges of a relatively thick plate such, for instance, as a manhole cover.

In closing, the writer wishes to call attention to Plate No. 2, which gives the results of tests made at the University of California.

The information given is very complete and clearly indicated.

Plate No. 3 indicates the method of loading and type of support. Plate 1 shows loads carried and the characteristics of the material of the plates.

In addition to the above, Plate 1 shows graphs of the load deflection curves which are very interesting. In this plate it will be noted that there are two breaks in the curve indicating elastic limits.

According to the writer's theory, the first break will occur at the load corresponding to the point where the plate has reached this limit in resistance, that is, the elastic limit, for what we will term pure plate action. Beyond this point the plate yields rapidly in bending, but the resistance increases as the catenary action comes into play and indicates that the stresses are a combination of the above-mentioned two actions. The resistance increases to a point where the stresses reach an elastic limit from catenary action and at this point the second break in the curve will occur.

This phenomenon of two breaks in the curve will be found in the load deflection curves of all the experiments on steel plates that have been plotted up to date.

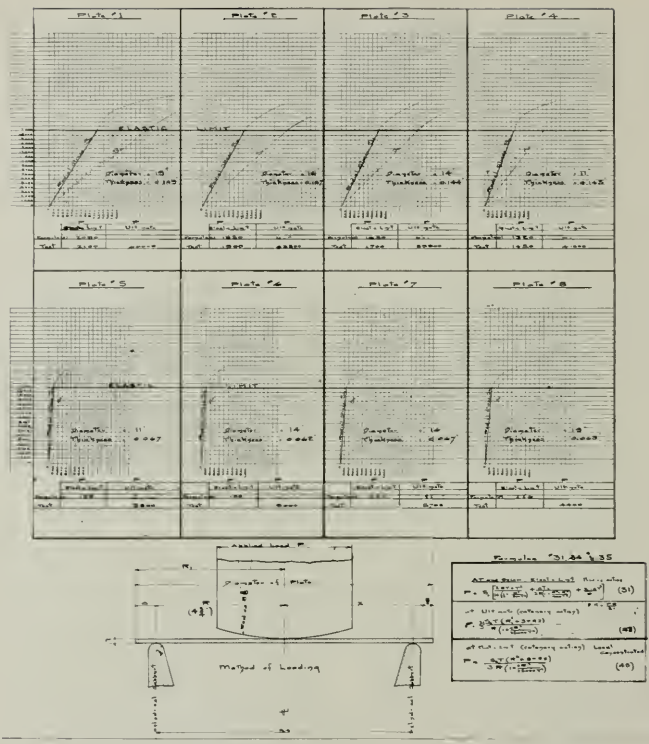


Plate 3

In order to compare the formula with the tests the writer has plotted on Plate No. 3 the curves for the various test plates up to the elastic limit. Plate 3 gives, therefore, the load that the test plate would carry at the elastic limit according to the theory. The theoretical results appear to be in reasonable accord with the load deflection curves from the test.

We say "reasonable accord" for the reason that the curve as plotted from tests is not of sufficient refinement to indicate accurately the breaks.

It is to be hoped that tests made in the future will be of such nature that the breaks will be clearly defined and also that some further information will be gained as to the reduction factor for the ratio of the radius to the thickness.

In the May number the writer will give the basic ideas controlling the action of plates under loads, illustrating the difference between plates and beams.

Prosperity in Central California

By O. P. SHELLEY.

TO THE MAN who can see clearly and analyze and judge correctly, "Prosperity" for Central California is a vivid present condition, and Opportunity as ever travels with Prosperity. It takes real effort to get out of a mental rut, also the average man is far more susceptible to the influence of pessimistic rather than optimistic talk about business conditions, so that instead of analyzing existing conditions, the whine of the salesman who, unable to land the business, continues to complain of cut-throat competition and lack of prospects and the despondency of some business heads because of small volume of business they do, is apt to be accepted as true evidence of business conditions.

Actually, such salesmen never realize that they only bid for possibly one-third of the actual orders—the price competitive third—another third going to the really live competitor without getting "on the market" at all, and still another third, while getting on the market, is so restricted that quality and ability land the order anyhow. Such business heads as we mention above blindly lay their troubles to poor business conditions, whereas an analysis might show one or many of the following troubles, viz.:

Red tape, misnamed system; too much "overhead"; lack of service and the right spirit towards customers; poorly assorted or unbalanced stocks; needlessly expensive delivery systems; inadequate or too often no advertising; too many officers drawing salaries, but with no adequate returns; these are a few of the usual troubles.

A study of Dun's or Bradstreet's reports will show that good or bad times, excepting short periods of panic, have no very marked bearing on the total number of failures and that of the causes of failure, incompetency heads the list.

Good times in the East are too obvious to be argued, and the two resulting conditions, viz.: high price and scarcity or shortage, are no handicap to those who plan accordingly.

It is just such times as these, when high prices prevail for materials, that the truly competent Architect and Engineer come to the front by effecting really substantial savings for their clients by skillful and economical designing, and this feature is brought out very strikingly in the following short article by Chas. Evan Fowler, a prominent Consulting Engineer of Seattle, in an article in the March issue of Pacific Builder and Engineer:

The prevailing prices for steel and fabricated steel work for bridges and structures has caused the temporary stopping of many medium and large sized bridge and building projects.

The prices for plates, angles and channels have advanced to $2.25 per 100 lbs. at Pittsburg as a minimum for long-time delivery, and for quick delivery the prices at Pittsburg are from $2.50 to $3.00 per 100 lbs.

The fabricating shops are all equally busy and the prices for manufactured bridge material range from $85.00 to $100.00 per ton delivered at Pacific Coast terminal points, as against less than $50.00 per ton as asked about a year ago. The price of $85.00 per ton would represent a delivery in eight or ten months, while the $100.00 price would be asked for delivery in three or four months from stock material.

There is, then, a very serious situation confronting those desiring to build, especially as the indications are that the present era of high prices will continue for five years or more, at least we can look for no very material lowering of prices in the next three years.

The price of lumber has already advanced very materially and will continue to advance for the next three years or more, and for several years after the closing of the European war.

The price of cement is firm and with an increased demand, which is sure to come, the price is sure to advance very materially.

We have, then, a situation which denotes that nothing is to be gained by a delay of three to five years, and which calls for a thorough investigation by a specialist in bridge and structural design, as to the most economical type of construction and as to the best materials to use.

The type of structure would have most effect in a bridge, where there would be a half dozen or more methods that could possibly be used for any one structure and where the economics of design would be a very essential factor in making a decision.

The type of construction to use in a building or other structure would also be a very important thing to consider and the saving to be made would pay the fee of a specialist many times over.

The kind of materials to use would depend upon so many factors that it is out of the province of an article of this kind to enter into a discussion of the various phases of the subject, but it is not too much to say that the prospective builder will be very much surprised at the results to be obtained by a careful study and investigation of the structure in contemplation.

The engineer a year ago could make very little showing in actual dollars by a very considerable saving, due to a careful study and design, but now the saving in dollars becomes of such a magnitude as to give credit to a designer of wide experience for the same expended in reaching a conclusion as to the best type of construction and the best material to be employed.

The experience gained in many years in actual shop construction and also in field construction will enable an engineer to determine also the method to pursue to obtain the best results in time.

The maximum result to be the best structure that can be obtained in a reasonable time and at the least expenditure of dollars.

The one thing that the region around San Francisco Bay has always lacked to make it self-sustaining and stable, has been factories and industrial enterprises, and now we are certainly getting them. In widespread newspaper advertisements last week, advertising their issue of April 1st, "The Saturday Evening Post," themselves the largest weekly advertising medium in America, gave as one of the three reasons for the tremendous increase in their advertising this year over last, "a healthy confidence throughout American business." And it is easy to feel the same undercurrent of confidence manifesting itself throughout industrial and commercial enterprises in this territory.

San Francisco sees the big tobacco factory of the John Bollmann Company under construction, Zellerbach & Company and their eight-story factory and warehouse, covering half a block; the addition to the Ford Motor Company plant, the new Overland Automobile Assembly plant, the enlargement of the Western Sugar Refining Company, and the new factory of the American Can Company, the contract just signed for the Kleiber & Company truck factory, the new spring factory of the Simmons Manufacturing Company, who have just consolidated with Rudgear-Merle Company; the new factory for M. J. Brandenstein & Company, the expansion of the Union Iron Works, the definite location of the offices of the Southern Pacific Company in their own large building. These are a few of the ways that San Francisco feels the revival of business prosperity.

Oakland has attracted the consolidated plants of the Albers Milling Company, the impressive factory of the Shredded Wheat Company, the enlargement of the California Cotton Mills, the immense Chevrolet Automobile factory, and the Pacific Tire and Tread Company's new factory, the Marchant Calculating Machine Company has just finished a new factory for themselves, while Bekins Van & Storage Company and Lyons Van & Storage Company and M. C. Luckenbach are all putting up large warehouses.

This activity is not confined to the large cities, either, for West Berkeley sees the erection of the large soap factory of Peet Bros. and the doubling of the plant of the California Corrugated Culvert Company; Richmond, the big Western factory of the General Roofing Company; Palo Alto, the factory and laboratories of the Federal Telegraph Company; Crockett, the large improvements of the California-Hawaiian Sugar Refining Company, while at Antioch the California Paper and Board Mills are adding to their plant.

All this shows the widespread industrial and commercial activities that must underlie all prosperity and will in turn be followed by the building of residences, office buildings, hotels, apartments, etc., for these latter are the results which are often mistaken for the causes of prosperity.

What is needed now is not to question prosperity, not to work each community and each individual for themselves, but all together to work unitedly to enlarge and hold the prosperity now upon us.

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St. Paul's Cathedral, London, in Critical Condition

WITH reference to repairs to St. Paul's Cathedral, the London Builder states that additional funds are urgently needed to provide for its safety by strengthening the piers and buttresses. Two years ago an appeal was made for $350,000 for the Cathedral Preservation Fund, but only half the amount was provided when the war broke out. The Builder, quoting from a daily paper, reveals the following interesting situation:

Canon Alexander, treasurer of St. Paul's in the course of a statement on the structural condition of the building, said that the vast and imperfectly distributed weight of the dome has caused the present problem. The pier on which work has been going forward for a long time—standing at the critical point of pressure toward the southwest—has been reported in the last few weeks to be showing even graver conditions than had been anticipated. The danger is not so much one of recent settlement as of "senile decay," accelerated by the gradual pressure of the dome, the rusting of iron and internal degeneracy of the extremely inadequate repairs executed at some earlier period. It was said recently that "only the loyalty of the materials to one another" has kept the fabric safe so far. Some of the most delicate work, thus taken in hand just in time, has already been carried out, but it is not known what difficulties may arise elsewhere.

It is unfortunately true that great buildings always entail the expenditure of large sums of money in repairs when they have been in existence for a few hundred years, a result which is largely the effect of the truth expressed in the Eastern axiom, "The arch never sleeps," and St. Paul's is apparently no exception to the general rule.

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Merced School Competition

Through the efforts of San Francisco Chapter, A. I. A., a competition is being held for plans for a new high school building in the city of Merced. Bonds to the amount of $125,000 will be voted. The competition is open to any architect in the State who is a member of the Institute.

When The War is Over—What?

CONSTRUCTION in 1916 and 1917 promises to be without parallel. Finance, credit and the remarkable condition of the building material market prove the presence of prosperity. The improving demand for rentable space establishes its foundation, and the most gratifying feature about it is that it is general and not merely local.

The story of the depression existing prior to August of last year is too well known. Few realize what has been happening in the last five months. From January 1, until the huge credit of half a billion dollars was established in this country for the Allies, practically every industry associated with building construction was being operated on reactionary bases. Whether the extension of credit to America's biggest customer was ethically or morally right or wrong, the fact remains that August showed a resumption of 13.7 per cent over August of a year ago. September showed a gain of 30.5 per cent over the same month in 1914, October developed a gain of 37.9 per cent over the identical month of 1914 and November developed a gain of 55.5 per cent in national plan filings.

There is not the slightest doubt that the initial impetus to the improvements in national building construction was due to the demand on the part of mills catering to war supplies for more room. The city of Bridgeport, Conn., added 22,000 skilled artisans to its population in a few months and erected under forced conditions new factory buildings aggregating almost $3,000,000 in value. This is only one typical New England manufacturing city.

It is estimated that $2,000,000,000 has been paid out in wages and additional building costs, machinery and supplies directly traceable to war munitions and manufacture of equipment since January, 1915. This money has passed through the hands of a large percentage of the 16,613 architects, 174,422 builders and building contractors, 135,000 electricians and electrical contractors, 14,514 mechanical engineers, 52,033 civil engineers and 17,000 building material manufacturers, making a general distribution of 409,382 employers, who, after taking their profits, have passed a liberal share on to labor, which has been accorded higher wages and shorter hours.

Normal national value of annual production of building materials exclusive of equipment totals $1,495,544,120. Government authorities estimate that this year's total will be extended to $2,500,000,000, at least.

If that fact develops, it will be easy to see why there is a mill shortage of building materials at this time. This demand, as has been stated, began only in August. Prior to that period every manufacturer was suffering from shaded prices and keen competition. Sick of the routine work of making standard building commodities for little or no profit, they reduced expenses by shutting down their capacities from 30 to 75 per cent.

Labor is better employed than it has been in seven years. There is an actual shortage of unskilled labor. The salaried staffs of large corporations released because of the depression in many lines a half year ago are now in employment. New help has been taken on. Savings bank accounts are being added to instead of being withdrawn. This has released money for building mortgages and building operations.

But there is a bigger side to it, namely, that relating to large mercantile expansion and its ultimate effect upon building demand.

There is not the slightest question but that renting conditions are improving in all the leading cities. In New York there is a demand for loft and office space that is changing the policies of renting agents. Conces-

sions are not now so easy to obtain. Firms that closed their offices and took their executive departments to out-of-town mills to cut down expenses are opening in New York again, and in many cases are taking larger space. Idle space in the old wholesale district is being taken up by manufacturers as storage places to make way for munition work that brings a high immediate profit. The stored goods awaiting order here will avoid risk of railroad cluttering next spring or after the war.

Every contractor and building material interest is wondering what effect a sudden termination of the war will mean. Conjecture is running rampant. Some predict panic. Others predict retraction. Others confidently look for uninterrupted prosperity.

Based upon economic cycles, we are in line for at least the usual seven fat years following seven lean ones. But placing prognostication upon more concrete material, it might be stated that the saving factor and the most positive agent in assuring permanence of prosperity is that few lines are over-produced. Here was the danger in 1909, and it was the stumbling for the embryonic prosperity of early 1912. Everybody had an abundance of manufactured materials and were ready to sell them at a discount.

Today the opposite is the rule. Nobody, either now or after the war ends, should peace be declared between now and August, can or will be able to afford to sell even at basic prices ruling in 1912. It will not be possible to manufacture to excess because labor is already too scarce. The objection that the termination of the war will release large numbers of mill hands is set at naught by the fact that all war contracts are taken for a given number of years, mostly three, regardless of whether the war continues or not, and upon the termination of these contracts the United States Government will take care of war munitions output for a number of years in line with its pledged preparedness program. Imports will be offset by an increased export business in lines, notably cement, magnesite block, special building hardware, steel, iron and other products, thus keeping up a demand for commodities at home, especially if there is suitable tariff protection enacted to help insure our own industrial welfare.

The national keystone in the arch of prosperity is machinery. It holds full control of the future industrial welfare of this country. Every machine shop of consequence has its capacity taken up to varying months in 1917. The manufacturer who would attempt to put in labor-saving machinery this year will find it almost impossible to get the equipment he wants. This will keep his output low, prices high and labor well employed.

With this condition obtaining there is no need for worrying about the permanency of the growing prosperity. It does not hinge upon the war. It centers, more than upon any other thing, on the enactment of the $1,-230,000,000 preparedness program, the passage of a suitable merchant marine bill and proper protection for American industries against the dumping by Europe upon our shores of unmarketable products that have been in storage since the war began.

The inflow of gold is not likely to stop even after the war ends. But America is now not independent upon that avenue of financial sustenance. Foreign credits are excellent. They have helped to bolster up conditions here, but the weight of responsibility for future prosperity and future good building conditions centers upon our success in obtaining an export market for our own products. If we are to have an adequate merchant marine our prosperity is permanently assured.

Financiers who are in position to know say that money has been made as fast in the last seven months in financial circles as it was lost earlier

in the year and immediately following the outbreak of the war. This means a good demand for securities. A good demand for securities means a healthy mortgage market. High mortgage rates attract capital and mean that commercial and residential renting space is in good demand, and when that is the case building proceeds at a pace that considers neither the high cost of materials, the ascending price of realty, but only the finished structure with prosperous tenants within.—New York Real Estate Record.

* * *

Making Architectural Exhibitions Popular

SAN FRANCISCO will not have an architectural exhibit this year. One reason for this is the poor attendance that has marked the holding of previous exhibitions. A second reason is that too much of the work heretofore has fallen upon a too limited number of willing hands. The exhibition in Los Angeles last month was a success in so far as bringing out some splendid examples of recent architecture in Southern California. But the attendance was nothing to boast of. In New York this year the Architectural League has held one of the most successful exhibitions in its history. There were several good reasons for it, one of the most important being the introduction of "popular features." What these popular features were may be best described by quoting from an article in the New York Sun:

"The Architectural League exhibition is generally considered to be the most popular one of the year. The current show will not be an exception. There is the usual diversity of decorative wall paintings, great and small (referring of course to size, not to qualities, the great mural painters having turned out little this year), the usual sculptures, textiles, tiles, ironwork and the customary modicum of architecture.

"The crumbs of architecture flung to us this year seem less than usual, but on the other hand we are recompensed with an elaborate Italian garden, with terraces, real pools of water and real hedges, the whole Vanderbilt Gallery being given over to this spectacular effect, which will strike the thoughtless dumb with admiration. It is not a real garden. It is not copied from a real garden and it is not a model that any sensible person would incorporate into a landscape. It turns the gallery into a stage setting, provides an agreeable background for one or two unimportant pieces of sculpture and makes it well nigh impossible to give any serious attention to the architectural plans in the corners of the room.

"The design to make the Architectural League more popular than ever will doubtless succeed, for the baits flung out are precisely the kind that our good natured public loves to nibble at, but that any serious gain to the cause of architecture is achieved is less than doubtful. The embellishment of the exhibition has gone so far that the exhibition itself is lost sight of.

"However, since the committees have erred, it is well they have erred so magnificently, since extravagance of this sort is almost self-correction, and the outcries of the suffocating and swamped architects will compel a return to less fussy methods next year. The danger will be that the revolt will swing too far into puritanism and that next year we shall be crying out that the Vanderbilt Gallery has become a barn. But at all costs we must give architecture a fair chance in the Architectural League exhibitions.

"Architecture more than most arts needs to be talked about, and the methods imposed upon architects by what is called 'modern civilization' are so arbitrary and difficult that it is no longer possible for an architect to work out a problem from an individual experience, but he must rely more and more (under the present system) upon organized effort. To me it seems that the New York architects are for the most part up against impossible conditions. The efforts being made by them are as valiant as any that past artists have made, and the intelligence might be said to be equal to that of the architects of the past, were it not essentially unintelligent to attack unsolvable problems.

"The two great handicaps that modern American architects labor under when they strive to compete with ancient masters are known by all of us and have been mentioned in these columns to the point of boredom. No real effort to break the shackles and free architects is being made, however. The prospects of such a campaign are so far reaching, and there is so much complexity in the way of politics and finance that the leadership of a Napoleon is necessary, a Napoleon who shall be backed by a Ford or Carnegie endowment fund.

"Merely to be clear, the two restrictions hinted at are these: Lack of municipal control over city architecture and the mechanical methods of constructing modern buildings. A building that looks as well on paper as an ancient master's work is rendered stupid by the mechanical fashion in which it is erected. If by a miracle it looks well, even then the day after something erected next to it utterly ruins its effect.

"New York at present is probably the richest city in the world, certainly it is the place where the world's money is being handled, yet in all of its miles of streets it has no 'places,' it has no picturesque street crossings, no backgrounds for monuments and no framework for parks, in short it lacks all the architectural attributes of a beautiful city. Until there is control and restriction New York never will be anything but a puzzle to lovers of the beautiful.

"To brag about the height of the Woolworth Tower is beside the point. A short time ago we bragged about the Singer Building just as lustily. To build such expensive structures for a reclame that lasts but two or three years (until the still higher tower comes along) is like a child's game. Joe Pennell is already shouting that the Woolworth Tower has been spoiled for him by the towers of the new Equitable Building, but we needn't bother about Joe here. The fact is it is time for the architects to look our much vaunted 'liberty' in the face and determine how much as artists we want of it. At present our idea seems to be that it gives each of us a chance to shout aloud. We do so, there is a great uproar and all ideas are engulfed—only the uproar is heard.

"The idle public will flock to the galleries to see the Italian Garden and the gimcrack decorations (at least I hope they will, for there is no reason why they should not abstract such entertainment as they may from these features), but the attention of architects will doubtless focus upon Mr. Goodhue's model for the proposed new church for St. Bartholomew's. They should also take an earnest look at the interesting exhibition of the American Academy in Rome and sigh for the days when they too were students abroad and planning idealistic monuments.

"A criticism of the proposed new church is not possible without the plans. In fact, criticism of architecture is never called for by the Architectural League, for the simple reason that the works of art themselves are not on view. Talk is possible, and the more talk before the building goes up the better.

"Whether architecture has advanced or not the fact is undeniable that the art of presenting architectural ideas to clients has progressed immeasurably. Every year, it seems to me, the architectural models and the sketches of facades and interiors get more and more alluring and less and less criticizable. The model for St. Bartholomew's is so impressive that any mere committee must be bowled over by it instantly. The feeling of any vestryman must be 'Yes, yes, put it up tomorrow.' And at the rate our mechanics are perfecting themselves the time is not far distant when such buildings really will be built in a day. But the hopes and fears that I have for the new St. Bartholomew's are all connected with the manner in which it will be built, its site and the possibilities of what is to be built next door.

"Without having seen the site, it is evident that the last contingency is one that is to be reckoned with, as it was in the building of St. Thomas'. Certain places appear in the model to have been sliced off with a great knife. These are the places where the building connects no doubt with something already standing. The masses of the new building culminating in a tower are carefully filed one upon the other in the effort of self-protection against the unknown structure that may be erected near by. To make a design that shall compose with something as yet undecided upon has been the unfortunate architect's terrible task.

"However remote the dream of mediaeval workmanship may be from the scheme of the present, all must admit that could Mr. Goodhue's design have been carried out by mediaeval workmen, its chances for remaining interesting even when completely finished, would have been greatly enhanced."

* * *

Proper Consistency of Concrete

UNSATISFACTORY concrete will result from the very best of aggregates if they are not properly proportioned. The too prevalent unscientific method of arbitrary selection, at present in general use, would scarcely seem to have been justified even by the added facility with which the work can be constructed.

W. S. Gearhart, Chairman of the Committee on Proportions of Materials and Consistency of Concrete, recently pointed out to the Conference on Road Building held in Chicago that if concrete were specified to withstand certain tension, compression, abrasion and absorption tests, and to be subjected to expert inspection, most of the difficulties and failures from faulty proportioning of aggregates could be removed. The requirements for consistency should be more definitely specified. The present terms used in defining consistency are altogether too indefinite to the ordinary contractor. Consistency could probably best be defined by describing how concrete should act and the form it should take when deposited.

Until some form of apparatus is devised and a systematic method of inspection established little can be done to overcome the present unsatisfactory consistency specifications. Having concrete too wet should be especially guarded against, since wet concrete gives a material inferior in quality and strength to concrete of a medium or quaking consistency. Experiments with hydrated lime in concrete seem to indicate that it decreases the percentage of voids, produces a more impervious concrete, reduces expansion and contraction under moisture changes, and prevents segregation. In spite of the wonderful progress that has been made in concrete work we are evidently still very considerably in the dark as to its scientific preparation.

A "Snail-Shell" Stair

How the "Snail-Shell" Stairway Gets Its Name—Looking Down Four Flights of Uninterrupted Concrete Spiral

THE only spiral concrete staircase of its kind in the world has just been placed in the tower of the Southwest Museum in Los Angeles. Similar stairways exist elsewhere, as in the tower of St. Paul's and the tower of the cathedral in the City of Mexico, but they were built before the age of concrete. When viewed from above, its resemblance to the shell of a snail at once gave it a name. Says Frank Reed of that city, writing in The Engineering Record:

"It is, for its purpose here, an improvement over Sir Christopher Wren's masterpiece—the spiral stairway ascending the interior wall in the tower of St. Paul's Cathedral, London. The Southwest Museum helical staircase is built inside a well in the center of the tower, thus not only preserving for shelves or mounted objects the entire interior wall-space of the tower, but also supplying on its own exterior wall additional space which may be employed for museum purposes. . . . The tower containing the stairway is seven stories in height, with three mezzanine balconies in the three upper stories, giving the equivalent of ten stories.

"The tower is 35 feet square, and is supported by twelve columns and external walls 8 inches thick, reinforced with steel. It rests on a solid concrete slab or raft 3 feet 6 inches thick. The total height is 125 feet and the weight is 1,000 tons. The construction was carried on continuously, a story being poured at a time. The staircase well is 9 feet 2 inches in external diameter and is supported by four corner columns with 8-inch walls between them, with light and ventilation openings at each story. The stair is known as a caracole, on account of the likeness to a snail shell presented by a vertical view, as shown in one of the photographs.

"With one exception it is the only helical staircase in America having a hollow center, the other one being an ancient stone staircase in the tower of the cathedral in the City of Mexico. The stairway contains 160 steps with 7½-inch rise each, and was built around a galvanized iron form in the shape of a pipe, while wooden forms were placed for the stairs. Material was prepared at a special rock crushing and sand plant located about one mile from the building, in a dry river bed."

Spiral concrete staircase.

Services of an Architect

THE thinking public is awake to the value of the services which an architect is capable of rendering, and recognizes that his province bears the same relation to the owner as that of a specialist in medicine or surgery to his patient. In countless ways the expert advice and suggestions of an experienced architect will be found to have substantial value, and his worth, in this respect, cannot be economically ignored by anyone who has determined to build, whether it be a bungalow or a great commercial or monumental project.

When a location is in contemplation, or has been determined upon, the architect selected should be made acquainted with the owner's ideas and conception of what the building should be, and its character and purposes. The exigencies of the site should then be studied, and the climate, outlook, grades, drainage and other essential factors carefully considered, as their influences make for the success or non-success of the completed building.

This will enable the architect to obtain a knowledge of the essential requirements, to discuss any fallacies, and to sketch out practical and comprehensive plans for the interior arrangement and exterior design, organized and adapted to the real need and precise conditions, in conjunction with the economic conditions that underlie the problem. These preliminary studies may offer several solutions, each advantageous from one point or another, which may be intelligently discussed with the client and lead to definite conclusions.

From these sketches and studies showing the general plan and design of the building contemplated, with their accompanying synopsis of the materials of construction, fixtures and finish, close approximate estimates may be obtained from contractors. These estimates afford a basis for determining the future possibilities of the project and enable its further development by the preparation of the final working drawings, which involve an accurate layout of all the floors, all the elevations, both exterior and interior, also typical sections and details of the methods of construction. The working drawings must be so complete that a contractor will know exactly how and of what material every part of the building is to be constructed, thereby forestalling any guessing, which so frequently is costly to the owner.

The working drawings are accompanied by specifications, taking up in the form of a description what it is impossible to express on the drawings, and stating therein with clearness and precision the grades and character of the work, materials, ingredients, appliances and fixtures required to be used and installed. These specifications also show how the contractor shall do certain portions of the work and co-operate with the various subcontractors; they also state the indemnity bonds, insurance, etc., required; and, in general, form a complete thesis of the building to be constructed, leaving no doubt in the mind of the contractor as to the exact amount and character of the work called for. This assures that all estimates received shall have been intelligently submitted, and that, when the contract is ultimately awarded the contractor can plan its progress with a definite knowledge of the materials and requirements, the work being thus carried out with greater expedition and consequent economy.

When it is decided to begin work, a legal, binding and definite contract must be prepared by the architect, in which the requirements on both sides are clearly set forth; the "instruments of service," in the form of specific

and technically intelligible drawings and specifications, being made a cohesive part of this contract. Definite terms of payment, time of completion, and requirements in connection with lien laws must be provided for. There must also be provisions in the contract for fire, lightning, casualty, compensation and contingency insurance, also for necessary bonds in connection with completion, and for compliance with local, municipal or state requirements, departmental directions or rulings, ordinances and acts.

After the contract has been awarded, the architect should be placed in full charge so as to enable him to direct and observe the proper laying out of the work and to see that plans and specifications are conformed to. He must also make proper disposal of the problems that arise while the building is in progress, passing on all technical questions and furnishing from time to time explanatory detail drawings of the various parts of construction, ornamentation, fixtures, arrangements, etc., as required. He issues certificates of payment as they fall due under the terms of the contract and also becomes the arbiter in all questions of dispute.

It is only by following these steps, in their logical, natural sequence from the very conception of the building to its completion, that an owner can obtain the best results with a minimum of worry and a maximum of economy.

In order to construct a building successfully, it is necessary to anticipate each step in the progress of its development and to outline a complete system for its erection and to control the work until the building is turned over completed to the owner.

Full architectural services, rendered by a competent man, will save many times his comparatively small compensation. The instruments of service, the plans and specifications, are the fundamental elements in the contract, and to produce them requires thought, experience and learning, also familiarity with the qualities, properties, peculiarities, weight and strength of materials, the weights of the structure and the relationship of the various operations to be performed by the many trades in the building.

C. E. Schermerhorn, A. I. A.

* * *

The Washington Power House

It appears that the work of excavating for the foundations of the Washington power house on the original site selected on the Mall is proceeding, despite universal protest on the part of all citizens of the United States who are interested in safeguarding the beauty of the Capital and who hope to see the plans of L'Enfant and the Fine Arts Commission carried out. Public opposition to the objectionable site has proven futile for the time being, but it is thought that there is still hope that good taste and reasonableness may triumph in the end. This may not be, however, unless Congress or the President decide in favor of a reconsideration of the projected location.

An unfortunate phase of the whole situation is the precedent established by disregard in this case of the executive order requiring the plans of any new building in Washington to be submitted to the National Fine Arts Commission for approval before a site is assigned to it. It makes little difference in the final result whether disregard was due to inadvertence or not. Irregularities in procedure are not excused thereby.

The Licensing of Architects

IT IS required by statute that before practicing their professions lawyers be admitted to the bar, and that engineers, clergymen and doctors should have received a degree. Architects can, however, practice at will, without having qualified for their work, excepting in their own estimation. Why has the profession been left unguarded to unqualified invaders? Has it inherent qualities of so high a character that it needs no protective barriers? Are the difficulties of its practice so great as to discourage any attempts to practice it by untrained persons? Does it owe any duties to the public to guide them in the choice of its practitioners? There are unscrupulous men and inefficient men in all professions, and a Nemesis of sorts always awaits them, though it sometimes takes a long time for them to receive their deserts; but in all cases, excepting that of the architect, at least some qualifications are demanded. Why are architects an exception? Possibly because an architect is primarily an artist, and art cannot be controlled by statute beneficially. Possibly because the architect is a business man, a promoter, and statutes that apply to such persons become active only when procedure is criminal. It may be that as with poets—it is not advisable to nip "mute, inglorious Miltons" in the bud. But taking it for granted that any coercive act requiring a certain amount of training may be inimical to a very occasional genius who might have succeeded if he had not been suppressed, cannot it be claimed that there might be requirements demanded which even a genius could overcome, and that the act of overcoming them might be of benefit to him? To eliminate bad elements need not endanger good ones. An act licensing architects need not be an antitoxin which might destroy the subject for whose welfare it is to be used; it may be merely an antiseptic preventing contagion. Another plausible claim can be made that an acknowledged stamp of qualification, if it is based upon so low a degree of merit as it must be in dealing with prospective and not actual practitioners, belittles the profession generally and reduces all to a lower level. This seems specious, especially as in every profession degrees of attainment are recognized by special indications of merit.

The qualifications necessary to practice a profession should be those which would imply criminal ignorance if unknown to the applicant. Afterwards, progress can be rewarded by honors, one of those honors being election to the American Institute of Architects. And, incidentally, the neglect to place the letters A. I. A. or F. A. I. A. after an architect's name is not praiseworthy as modesty. These letters represent an honorable distinction, a reward of merit, and an indication to the public of the esteem in which the man is held by the members of his own profession, who are better fitted to judge of his qualifications than are any other people to whom this might be delegated.

But to return to the subject of the licensing of architects—the principal argument in opposition seems to be based upon the anticipation that men who deserve little will receive formal acceptance in the professional ranks, while at present they are outlaws; that they will be endowed with a mantle of respectability which they do not now possess. This would seem to depend entirely upon the requirements of the licensing act and the character of its administrators. At first the public would concern itself little about the matter; in time they would come to recognize the fact that advocacy of the licensing of architects by the architects would be an act of altruism, much more caused by a desire to protect the public from ineffi-

ciency than to clear the skirts of the profession. It would bring the outlaw within the law and make him subject to censure and expulsion, and therefore tend to make the profession unattractive to him. It would force him to overcome his limitations due to his neglect, and the standard of required attainment could be gradually increased if found desirable. It matters very little to the architect of acknowledged reputation that there are camp stragglers. It matters a good deal to the public whether they are pillaged by those individuals. The personnel of the licensing board naturally requires careful consideration; but as the duties of such a board would require but little time, for which there would be no monetary return, it would not be attractive to the professional politician. Even a bad government does not object to posing as a friend and protector of the people when it costs nothing to do so, and the appointees to the licensing board for architects would probably be men of ability. But even if they were not, the statute could be so drawn that it would be practically self-acting, and it very probably would be committed to the hands of the architects themselves.—W. H. C. in The Brickbuilder.

* * *

Old Furniture

RENAISSANCE ART made a great change in architecture and this change was exemplified in furniture. Examples of 16th century chests, cabinets, tables, seats, sideboards, etc., can be seen in museums and in many private houses. Pietra dura, or inlay of hard pebbles, agate, lapis lazuli, and other stones, ivory carved and inlaid, carved and gilt wood, marquetry or veneering with thin woods, tortoise shell, brass, etc., were used in making sumptuous furniture during the first period of the Renaissance. Subjects of carving or relief were generally drawn from theological or cardinal virtues, from classical mythology, from the seasons and months, etc. The elegance of form and perfection of detail, which are noticeable in the furniture of the 16th century, declined during the 17th all over Europe. The framework became bulky and heavy and the detail coarse. To this period belongs the name of Andre Charles Boule, who furnished the palace of Versailles. He invented or perfected a beautiful system of veneering with brass and tortoise shell, brass and ebony, occasionally using white metal besides.

The system of veneering, or coating common wood with slices of rare and costly woods, fastened down by glue with screw presses made to fit the surface to be covered, came into general use in the 18th century. Marquetry is veneer of different woods, forming a mosaic of pictorial or ornamental designs. In Italy, in Spain and throughout the dominions of Charles V and his successors, figure subjects, architectural views, and quaint interiors were represented in these materials. Usually two or three woods were employed; they were tinted by means of heated sand in iron frames, and the tints graduated to the utmost nicety. Sometimes these effects were produced by splitting and laying slices of the same wood with the grain running in different directions. The fine marquetry of the last century was made of tulip-wood or mahogany, with lime, pear, holly, beech and other light-colored woods; sometimes in ebony and ivory, in Italy particularly; or ebony and mother-of-pearl, the latter in Holland.

Looking-glasses in large sheets began to be exported from Venice at the end of the 17th century. The manufacture was established at Tourlaville, then in Paris, and about the same time at Battersea on the Thames—under government protection in both countries.

Robert Martin, who used fine lac polish, gave the name of "Vernis Martin" to painted and polished furniture of all kinds, from carriages and

wardrobes to fans and snuffboxes. He died in 1763. The discovery of Herculaneum and Pompeii turned attention to the elegant designs of the Greco-Roman period. Riesener, David Roentgen (known as David) and the ciseleur Gouthiere are well-known names of French cabinet-makers. Chippendale, Lock, Sheraton and Heppelwhite were Englishmen of the same period—the last half of the 18th century. James and Robert Adam designed beautiful satinwood and other furniture at that date. Medallions of porcelain were sometimes inlaid in cabinet fronts. Most of these manufactures came to an end during the French Revolution and the long war. The Empire style, a stiff, affected classicalism, prevailed in France during the reign of Napoleon. It is shown in the metal mounts of veneered mahogany furniture, and in the carving of chair legs and backs.

The best of modern furniture is undoubtedly as good as the old, but is exceedingly expensive on account of the painstaking care that must be taken in its manufacture and finish.—Exchange.

* * *

The Architect and the Other Fellow's Time

"ARCHITECTURE," in calling attention to the following plan, wishes to pass it along. This plan is said to be an almost Utopian appointment scheme; a new and logical idea, and one that should make for a conservation of energy in this age of efficiency. Of the architect who is working it out and in reference to his scheme it is said:

He is a very busy man—usually busy with matters that will not permit of interruption.

Sometimes in the past people whom he should have seen, both in his own interest and in theirs, have called a dozen times without being able to find the idle moment they sought.

In analyzing the situation, he discovered that people he really wanted to see sometimes did not come back—opportunities he would have taken advantage of were lost.

Because of the nature of his business—because absolute concentration upon the matter in hand is strictly essential—this man cannot make a practice of seeing everyone who calls.

This is the plan he hit on. Between nine and ten in the morning he is in his office.

He calls this his appointment hour, and during this hour he sees every man who calls for from one to three minutes.

He sees them only for the purpose of making an appointment—merely arranging for an interview.

The caller states the nature of his business, but the details are not discussed. Our friend gives only enough time to the subject to determine whether it is worth going on with. If he decides that it is, a later interview is arranged, and sufficient specific time is set aside to go into the subject thoroughly.

The man who comes in in the morning takes his turn. If there is no one ahead of him he does not have to wait.

If he is able to make an appointment, there are no interruptions when he comes prepared to talk business.

It seems like a conservation of time that would almost satisfy Arnold Bennett.

Perhaps you can get a thought out of it.

Remember it's pretty hard to place a real value on the other fellow's time. You may be doing him a real injustice if you waste it.—Building Review.

Architecture Tells History

TO most people it is a matter of little significance, but a moment's thought brings the sense that the standing of the people is permanently written in their architectural creations—not only in material and artistic, but spiritual wealth as well. The bygone nations, to the man of the world, are rated more by the architectural remains than by their literature. To the student, both architecture and literature speak clearly. The whole life history of man is read through the remains that time has spared and his place in the scale of human achievement is declared thereby.

Art necessarily follows commerce. The first needs of life are food and shelter and in a new country the struggle for existence and the lack of accumulated wealth give little or no time or opportunity for the finer things of life. It is only after these primitive needs are secured that we begin to have leisure with its opportunities for the development of literature and art, both of which are the portrayal of various phases of human experience, endowed with the idealism of the seeing and imaginative mind.

Now that wealth is being accumulated in this country, we are beginning to see here and there the possibilities of its use for the general good. The importance of the maxim "Choose well" becomes increasingly evident when it is remembered that architectural creations are material and permanent in their nature and therefore persistent in their effect. All readily concede that their lesson should be for good; that it should be every one's duty, as it certainly will be their pleasure, to lend every aid in a choice that conduces to that end.

In new communities, like our own, where we still elbow the aboriginal savage and where still live men who have carved their fortunes from the primitive wilderness, we may congratulate ourselves on the progress we have made and be encouraged for the future.

Strive we must and appeal to all for its support. It is for the common good and means as much (perhaps more) to the man in the street as to the better circumstanced, for no one stands in the presence of that which uplifts without responding to it in greater or less degree. The fact of the present and ever increasing fear of the future in the struggle for existence is (anomalous as it may seem) that which is the salvation of the laborer, the labor saving machine.—Exchange.

* * *

Moldless Concrete Construction

A new phase in Portland cement concrete construction which should prove of practical value to contractors and builders has recently been developed and many ingenious details of construction have been worked out to take care of practical problems which the contractor encounters on the job. This new plan is the erection of reinforced concrete without the use of forms or molds of any kind; the only special equipment necessary being a few inexpensive gauge strips and tamps. The walls in this construction are made up of concrete panels, molded flat on the ground and confined within light steel channels (known as metal lumber). The channels are held apart by steel rods which also serve to reinforce the concrete. When the panels are assembled, the channels come together back to back, and are easily locked in place. This method of concrete building construction is claimed to be revolutionary in its simplicity, low cost and adaptability.

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ARCHITECTS AND PUBLICITY

Architects were urged to seek publicity in a recent issue of the Architectural Review of Boston, and $50 reward was offered for information leading to the belief and conviction of any live chapter of the American Institute of Architects, or any local architectural club, which has held a special or monthly meeting prior to the first day of January, 1916, at which local newspaper men were present as honored equals and invited guests, and which was designed to acquaint them with what the architect stands for in his community and help the architects to realize what the representatives of the press consider to be "news" in architecture.

The Los Angeles Chapter should qualify for this reward. Its attitude towards the press has always been most liberal, in striking contrast to the San Francisco Chapter, we regret to say.

We believe that the editors of today are generally well aware of the high position, public spirit and value to the people of the architectural profession. This is true because the modern editor, worthy of his place, is enlightened. He holds architecture in its proper perspective as an active agency for the fine results of civilized life. The modern architect, worthy of his place, is enlightened, too. He knows the help which the editors can give to his profession. He knows that he is entitled to recognition for good work; his profession, also. This results in reporters being present at important meetings of architects. And it should not be necessary for the newspaper man to wait for an invitation. His city editor should have the date of the regular meeting night of the chapter on his calendar. A reporter would then be detailed to cover the meeting and should there be any business transacted of a private nature, officers of the chapter need only call the scribe's attention to the fact and the information would be withheld until such

time as it was considered advisable to release it.

DISFIGURING THE CAPITAL CITY

No sooner has the threatened disfigurement of the architectural unity of Washington, occasioned by the proposed substitution of brick for stone facing in the new building for the Department of the Interior, been averted than we are confronted with another artistic barbarism of far greater moment, comments the New Orleans Review. In fact, work has actually been begun on an immense central heating, lighting and power plant right on the Mall, less than four blocks from the Washington Monument and in full view of the Capitol and Lincoln Memorial.

In the first instance the officials of the Treasury Department listened to the men who are trying to make Government architecture distinctive, and for this reason their compliance entitles them to share equally with the architects the credit for the happy result. It is earnestly to be hoped that co-operation between those who have the matter in mind and the public-spirited citizens of the country who are ardently interested in making Washington the most beautiful capital city of the New World will, in the case of the power house, produce equally as happy results.

It appears that the plans for the power house have been drawn in the Supervising Architect's office and the contract let for a building to occupy the unfortunate site designated by the board back in 1913. Through inadvertence there was a failure to submit the plans for the consideration of the Commission of Fine Arts before signing the contract, which is in direct violation of the general executive order covering the plans for all new buildings of a public nature in Washington.

Having gone so far with the project, the mistake seems almost too imminent for prevention, but nevertheless the American Institute of Architects, as was its duty, took immediate action to focus public attention upon it.

This resulted in scores of protests which were telegraphed and mailed to Senators and Congressmen by the presidents of the Chapters of the Institute and many private citizens. Leading newspapers throughout the country protested vigorously, many by strong editorials in support of the findings of the Commission on Fine Arts, which concluded that the plant at that location would be seriously objectionable. The American Federation of Arts, the Committee of One Hundred, which represents the leading citizens of Washington who are interested in the Capital's development, together with the American Civic Association, have joined in the strong expressions of disapproval.

San Diego Architects

The San Diego Architectural Association held its annual meeting March 25th, for the election of officers and general business. The following officers were elected:

President, Charles Cressey (Quayle Bros. & Cressey).

Vice-President, W. Templeton Johnson.

Secretary and Treasurer, R. Halley, Jr. (Wheeler & Halley).

J. B. Lyman is the retiring president, during whose term the association received official recognition by the San Diego City Council and Board of Library Trustees in architectural questions before those bodies. It was decided to resume the regular monthly meetings of the association, and announcement was made of an interesting paper to be read at the next meeting on "Builders' Quantities," followed by discussion of the system as the basis of building contracts. Architect Hebbard reported tentative consideration of the transfer of the annual meeting of the California State Board of Architecture in April from Los Angeles to San Diego.

Los Angeles Master Builders

Mr. J. F. Atkinson has been re-elected president of the Master Builders' Association of Los Angeles. Eric Lund is the new vice-president, Walter Slater secretary and Weymouth Crowell treasurer. G. S. Tuite is assistant secretary. The annual meeting was preceded by a dinner at the Hotel Hayward.

Shea & Lofquist Busy

Messrs. Shea & Lofquist, who have designed many of the most pretentious Catholic churches in San Francisco, have completed plans for the new students' chapel at Menlo Park, for St. Patrick's Theological Seminary, and a contract for its construction has been awarded. The same firm is preparing plans for a sarcophagus to be built in the mortuary chapel at Holy Cross Cemetery in memory of the late Archbishop Riordan. Messrs. Shea & Lofquist have also made plans for an addition to the Star of the Sea Church on Eighth avenue and preliminary sketches are now being made for a five-story store and loft building to be built south of Market street, San Francisco.

Large Apartment House

C. A. Meussdorffer, Humboldt Bank Building, San Francisco, has completed plans for a large four-story and basement brick apartment house to be erected on Jackson street, west of Franklin, San Francisco. There will be two separate buildings owned by different clients, but connected by a 43-foot court. One structure will be owned by S. L. Pyser and the other by S. N. Wood. Each will be 60x127 feet and will contain eight apartments of six and seven rooms each.

$100,000 Contract

William Mooser, the San Francisco architect, has recently awarded contracts aggregating close to $100,000 for the construction of a Class "A" office building and 100-foot clock tower, also a power house, garage and flats, for the Ghirardelli Chocolate Company, North Beach, San Francisco.

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(ORGANIZED 1857)

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Architects Enjoy Lectures

The members of the San Francisco Society of Architects have taken keen interest and not a little pleasure in attending the series of illustrated lectures on "The Philosophy of Art," given at the Art Institute under the auspices of the San Francisco Art Association. These lectures have been given by Arthur Upham Pope, assistant professor of philosophy at the University of California, the course comprising eight distinct lectures, the first one being delivered on March 23d, the second on March 30th, the third April 6th; others will be delivered on April 13th, 20th and 27th. The two concluding lectures will be given on May 4th and May 11th. The one which most interested the architects was given on April 20th, when Mr. Pope's subject was "Some Theories of Architecture."

Fabre & Bearwald Busy

Among the San Francisco architects who have noticed improved business conditions are Messrs. Fabre & Bearwald, Merchants National Bank Building, San Francisco. They have a two-story concrete building for Frank and Lewis Canes to cost $18,000; a six-room, two-story frame and plaster house to be erected at Redwood City for F. Ferve, and a three-story and basement concrete store and hotel to be erected at Post and Polk streets. There will be five stores and about 36 rooms, part of which will have connecting baths.

Frame Residence

A. A. Lobree, with the Great Western Smelting & Refining Company, San Francisco, is having plans drawn by Alfred H. Jacobs for a frame, brick veneer and stucco residence to be erected on Eleventh avenue and A street, San Francisco.

Addition to Emporium Building

In addition to the fact already published regarding the addition to the Emporium Building, San Francisco, the architect, Morris Bruce, Flood Building, San Francisco, states that the scheme to be carried out is the same as the one planned by Albert Pissis, prior to his death two years ago. The plans have been completed and there will be no changes made to speak of. One additional floor will be added to the present Market-street building, while the Mission-street property of the Emporium will be improved with a six-story Class "A" warehouse. Besides this a three-story wing is contemplated, the entire work to cost in the neighborhood of $500,000.

Architect Mohr Receives Recognition

N. W. Mohr, formerly of the architectural firm of Fabre & Mohr, has received recognition from the Panama-Pacific Exposition, that corporation having recently sent its check to Mr. Mohr as compensation for work done in connection with the preliminary plans for the Exposition. Mr. Mohr was one of the first to suggest carrying out the present Civic Center plan for the City of San Francisco in conjunction with the Exposition scheme.

Big Apartment House

Plans have been prepared by Sylvain Schnaittacher for a seven-story reinforced concrete and brick veneer apartment house to be erected by Messrs. McDonald & Kahn on the east side of Stockton street, south of California, San Francisco, for Dr. Hartland Law. The building will contain 100 rooms arranged in apartments of two and three rooms each, and will cost approximately $150,000.

City Planning Conference

For the purpose of stimulating interest in city planning, several members of the San Francisco Chapter of the American Institute of Architects and a number of city officials gathered at a dinner in the St. Francis and at the conclusion of a lengthy discussion regarding the systematic beautification of the city, decided that the time was now ripe for Mayor Rolph to appoint the city planning commission.

Among the speakers at the meeting were City Attorney Percy V. Long, who took up the legal side of the subject; John McLaren, superintendent of Golden Gate Park, who outlined a general scheme of park units, and School Director A. A. D'Ancona, who spoke on playgrounds.

W. B. Faville, president of San Francisco chapter, presided at the dinner, which was the first of a series of three at which city planning is to be taken up in its various phases. The beautification of the Embarcadero will be discussed at the next meeting, and at the third the D. H. Burnham general plan for beautifying San Francisco will be considered.

Hillside Residence Apartments

More than a year ago Henry C. Smith, the San Francisco architect, prepared plans for a large concrete community residence building to be erected on a 50-vara lot on Russian Hill, near the southeast corner of Green and Taylor streets, San Francisco. On account of business conditions it was not deemed wise to go ahead with the enterprise at that time. The project has now been fully financed, it is said, and the architect is preparing to take figures and let contracts for actual construction. The building will be fireproof throughout, with reinforced concrete walls and floors, and metal lath partitions. There will be 16 residences, of from 5 to 12 rooms each, each residence having an individual entrance. A feature will be an electric tram elevator.

Brick Packing House

A three-story brick packing house will be erected on the southeast corner of Front and Pacific streets, San Francisco, from plans by Herman Barth, 12 Geary Street, San Francisco. The building is for Frye & Company of Seattle, Washington, and will cost $40,000.

Another Hospital for Palo Alto

It is reported that the old Hughes place in Palo Alto has been purchased by one of the Hooper heirs and the building will be converted into a hospital for convalescent patients.

City Hall May Be Converted Into Hotel

Messrs. Wright & Rushforth, 354 Pine street, San Francisco, have made plans for extensive alterations to the old San Francisco City Hall, recently vacated by the various city officials. This building was originally designed for a hotel and the plans for same were practically completed when arrangements were made with the city to lease the building as a temporary city hall. The original plans will now be followed to a considerable extent, it is said. The building is seven stories and basement and of reinforced concrete. It is owned by the Whitcomb estate.

Oakland Wants Oakland Labor Only

Charges that, after promises were made to employ local labor, the work on the County Infirmary is being done by San Francisco workmen, were made last month at the meeting of the Alameda County Board of Supervisors.

Supervisor Charles Heyer declared that wholesale dismissals of Alameda County workmen had been made in favor of San Francisco workmen.

"Hereafter I will never vote for a San Francisco contractor or any other outside of the county," he said.

San Jose Architects

Frank D. Wolfe, the San Jose architect, has moved from the Bank of Italy Building to the Auzerais Building. Mr. Wolfe has plans completed for two large commercial garages and a number of attractive bungalows.

William Binder has prepared plans for a two-story store and office building for himself. The store will be occupied by the San Jose agency of the Bass-Hueter Paint Company, while the offices will be fitted up especially for Mr. Binder's architectural practice. The building will be erected on South First street and will cost about $15,000.

Oxnard School Building

Messrs. Allison & Allison, 1405 Hibernian Building, Los Angeles, are preparing working plans for the proposed grammar school building at Oxnard. It will contain six classrooms, an auditorium to seat 500, and sloyd and domestic science departments. The construction will be hollow tile or brick walls, cement plaster exterior, clay tile roof, maple floors, shower baths and lockers, electric wiring, plenum system of heating. The estimated cost is $45,000.

Santa Rosa Theater

Santa Rosa is to have an up-to-date theater to seat 1500 people. The owner is Thos. C. Reavis of Berkeley.

$20,000 Stockton Crematory

Plans are being prepared by E. B. Brown, Masonic Temple Building, Stockton, for a $20,000 crematory for the Stockton Crematory Co., the incorporators of which are W. A. Wishart of Oakland, Dr. Chas. L. Tisdale of Alameda and Attorneys Thomas Loutitt and DeWitt Clary of Stockton. Building will be in the mission style, with cement exterior and tile roof. There will be a chapel with stained glass windows, including four ten-foot art glass windows and an 8x17-foot art glass skylight.

Government Wharf

The office of the supervising superintendent, room 403, Post Office, San Francisco, will receive proposals until 3 o'clock p. m., May 1st, for removing the entire superstructure of the present disinfecting wharf, including all equipment, etc., at the U. S. Quarantine Station, Hawaii, and reconstructing same on new concrete foundations. The wharf is 304 feet long.

Techau Tavern Cafe

Messrs. Cunningham & Politeo, First National Bank Building, San Francisco, have let the principal contract for the construction of a one-story cafe in the rear of the Arcadia Dancing Pavilion at Eddy and Jones streets, for the Techau Tavern Company, to Messrs. Barrett & Hilp, Sharon Building, San Francisco. The dancing pavilion is being converted into an ice skating rink.

Salinas Paper to Build

Duncan Stirling and D. A. Madeira, the owners of the Salinas Index, have purchased from the Hughes heirs the lot at the corner of West Gabilan and Salinas streets, and construction will begin shortly on a substantial concrete building which will be the new home of the Index.

Salt Water Bathing Plant

B. A. Minor and C. C. Boynton have been granted a franchise by the Alameda City Council to install a pipe line and storage tank system in South Park street for a bathing pavilion. It is proposed to establish a hot salt water bath house to cost $70,000. Minor is a prominent bathing resort operator of Southern California.

Big Warehouse for Oakland

Messrs. Burrell & Richardson, Albany Block, Oakland, have let a contract to F. A. Muller, Syndicate Building, Oakland, for the construction of an eight-story Class "B" reinforced concrete warehouse on the east side of Broadway, north of Piedmont avenue, Oakland, for the Lyon Storage and Moving Company. Contract price is $60,000.

Stanford Art Museum

Plans have been completed for a one-story Class "C" art building, to be erected on the university campus, Palo Alto. Messrs. Bakewell & Browne, are the architects. The building will be 198x60 feet and will have concrete foundations, brick walls, stone facing, steel roof trusses and lintels, wood paneling and stucco interior finish, clay tile and composition roof. The work will be let in some eight or ten different segregations.

Chalmers to Have Coast Factory

Hugh Chalmers, president of the Chalmers Automobile Company of Detroit, one of the largest manufacturers of motor cars in the United States, will establish an assembling plant in California, probably in Oakland, to care for the company's Pacific Coast business.

May Build $200,000 Storage Reservoir

It is currently reported in Richmond that the Peoples Water Co., under its reorganization plan, will build a storage reservoir in San Pablo Valley, three miles above the town of San Pablo, to store a billion gallons of water, and that the cost will be $200,000.

To Remodel Five-Story Building

The Fink & Schindler Company of San Francisco have been given the contract to remodel the five-story building at 51 Grant avenue, San Francisco, and install a new front and mahogany fixtures for the Wm. G. White Co., Inc., agents for Knox hats. The cost will be about $10,000.

Will Erect Apartment House in Oakland

Monson Bros., 1907 Bryant street, San Francisco, will erect for themselves a three-story 20-room frame apartment house in Oakland on the south side of 15th street, west of Brush. The building will cost $10,000. Plans were prepared by D. C. Coleman, San Francisco.

Ten Four-Room Houses

Edward F. Helms, 4303 California street, San Francisco, is preparing plans for ten houses to be erected by himself for investment purposes on Santa Ynez avenue in Mission Terrace, San Francisco. Each house will have an English basement, and will contain four and five rooms with bath and garage.

Private School for Girls

Miss Julia Morgan has prepared plans for a one and two-story frame and plaster group of school buildings to be erected on Jackson street, near Lyon, San Francisco, for Miss Katherine D. Burke. There will be an assembly hall and fourteen class rooms. About $40,000 will be expended.

Will Design Many Homes

Norman B. Coulter, Maskey Building, San Francisco, has been commissioned by Judge Trout to prepare plans for the first of at least 100 houses to be erected in a new tract near Redwood City. They will cost from $5,000 to $10,000 each. Construction will be frame, brick veneer and stucco, with composition roof, hardwood floors, brick and tile fireplaces, hot air heating, etc.

Cline Will Superintend

Edgar H. Cline has accepted a proposition from the California State Department of Engineering to superintend the construction of the proposed new fish hatchery building near Independence in the Owens River Valley. The plans for the building were prepared by the State Architect. It will cost about $30,000.

Sacramento Native Sons' Building

Washington J. Miller, Lachman Building, San Francisco, has prepared plans for a four-story lodge building for the Native Sons at Sacramento, the estimated cost of which is $140,000. The lodge intends to go ahead with the building this year.

Parochial School for Vallejo

Smith O'Brien, Humboldt Bank Building, San Francisco, is preparing plans for a parochial school for the Catholic parish at Vallejo. The building will be largely of frame construction, and will cost in the neighborhood of $35,000.

Interlocking Tile Now Permitted

The San Francisco Board of Supervisors have finally passed an amendment to the building ordinance permitting the use of interlocking hollow tile. This will give the concrete interests some keen competition.

Palo Alto Bank

The Palo Alto Bank will erect a two-story building on the site of its present structure. No architect has been employed as yet.

Engineer Designs Factory

Engineer Maurice Couchot prepared the plans for the reinforced concrete factory to be erected on the Foothill Boulevard, Oakland, for V. K. Sturgis, and which will be the home of a new California enterprise—the Pacific Tire and Tread Company.

Will Build One Hundred Cottages

The Lorden Building Company, a subsidiary of the J. P. Lorden Mill Company, 451 Fifth street, San Francisco, will build 100 cottages at Forest Knolls, the property of the Lagunitas Development Company, near San Rafael, Marin County.

San Jose Architect to Build

William Binder, the San Jose architect, has prepared plans for a two-story store and office building which he will erect for himself on his South First street property. The building will cost about $12,000.

Will Build Redwood Bungalow

The redwood bungalow which attracted so much attention at the Panama-Pacific Exposition and which was designed by Louis C. Mullgardt, will be duplicated at Los Gatos by Mrs. Francis Coleman of that city.

Recognition for Fresno Architects

Messrs. Swartz & Swartz, Fresno architects, have been commissioned to prepare plans for the new Elks building at Visalia at a cost not to exceed $50,000. This firm designed the new Fresno Elks building just completed.

Brick Church

Robert H. Orr, 1301 Van Nuys Building, Los Angeles, is preparing plans for a brick church for the First Christian congregation at Selma. The building will be "L" shaped, one story and basement, and of Gothic design.

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Special Articles this Month on "Flood Lighting," "Lighting the Home," and "San Francisco's New White Way"

Flood Lighting*

By FRANK A. BENFORD, Jr., in Lighting Journal.

FIRST among the rules of architecture is that of usefulness. Every building is built for some particular service and the treatment of the exterior must be suitable to that use. The appearance of a home, an office building or a church is entirely different. This difference does not arise from any deliberate planning, but because each serves its purpose best by being different. This matter of harmony makes any kind of lighting difficult, and some kinds impossible.

Effect secured when outline lighting is used.

Incandescent lamps may be used with good effect to outline a roller coaster, a steam yacht or a theater entrance, but who could dare outline a church, a statue or any historical building? Try to make such an installation effective, striking, and at the same time dignified, and the reason for flood lighting is at once apparent. It makes possible an extension of the range of spectacular lighting in a direction not considered possible a few years ago.

Let us suppose, as an example, that we have been requested to light up the front of a big department store. If we outline the windows, cornices, corners, etc., we undoubtedly get a large quantity of light upon the building. The man that pays for such an installation has a hazy idea that he is attracting attention to his building. What he really draws attention to is the lamps. When the lighting switch is closed the lamps come out and the building retires for the night. The result is that the department store bears a greater resemblance to a roller coaster than is good for business. The building which, in the daytime, was a solid, substantial structure fitting for a solid, substantial business often becomes an unreal skeleton work of glare and gloom. It is a hard matter to get an architect to enthuse over such a result and it will be just as difficult to get the owner enthusiastic over outlining after he has seen a good example of flood lighting.

A building facade flooded with light presents an attractive appearance for a number of reasons. First, the building, not the lighting, is presented to the eye. Second, the means of illumination is concealed and does not distract attention. Third, the building appears natural and real—exactly the impression sound psychology dictates.

Nearly every detail of any facade is a development that has come through long experience. To the amateur, the flying buttresses, arches, spires, and general treatment of any of the world-famous cathedrals may seem to exist purely for effect. Such is not the case, for each part has a definite historical and structural reason for being, and good lighting specialists must treat these details with due deference. We may not often come in contact with cathedrals in our daily business, but we do come into daily touch with business buildings that are just as ornate and beautiful, in their way, as a cathedral. The highly ornate buildings, and these are the most likely to require flood lighting, represent, after all, merely glorified common sense. In order to illuminate them in a common sense manner, it is necessary to consider briefly the requirements.

Flood lighting, or in fact, any kind of outdoor lighting, is a very recent thing. The light under which architects work and judge their work is natural daylight. The light of day is a rather complicated

*Illustrations selected by this magazine.

Effect secured when flood lighting is used. By this method of lighting, the finer architectural details are brought out, rather than merely the general outline, as would be the case with outline lighting.

affair, but we may consider it as being composed of a beam of sunlight and a large quantity of diffused cloud light. The sunlight gives sharp edges and shadows to a facade, while the cloud light fills in the shadows and relieves the strong contrast. Sunlight alone gives harsh contrasts that are displeasing and cloud light alone makes everything equally bright and the result is flatness and lack of detail. The happy medium is a mixture of the two, and it is this mixture that we should try to duplicate for night effects.

The correct method of flood lighting is to have a strong beam of uniform direction, to give form and details, and a weaker, diffused beam to relieve the shadows. Where it is possible, the strong beam should have a downward angle, and should always come from one side. The shadow lighting may then come from the opposite side and have a horizontal, or upward, direction. These directions are not always possible to obtain, but the closer they are approached the better will be the results.

The location of flood lighting equipment is largely up to the man on the job. There are many ways of lighting nearly every building proposition that may come up, and the details sent to the illuminating engineer can hardly be made too complete. One point that is especially apt to be overlooked is that the flood lighting unit is essentially a long range device. If the surface to be illuminated is large, the projector may be placed at a distance of one thousand feet or even more. The general efficiency of the unit is not lowered by long distances, so long as the beam of light can be kept within the boundaries of the facades.

There is such a number of things in favor of flood lighting, such as first cost, efficiency, maintenance and general results, that the most surprising thing about it is that it was not discovered before.

Home-Made Electric Light

Having become dissatisfied with the size of the electric light bills coming into his house each month, Thomas B. Wells of Spring Lake, N. J., has installed a plant in his own home which seems to combine the highest degrees of efficiency, convenience and economy. The current is manufactured from a 10-horsepower gas engine.

He has reduced the cost of lighting his house from 18 cents to 1 cent per kilowatt hour. He manufactures his own ice at a cost of a sixteenth of a cent a pound. He uses electric power for washing, ironing, cooking, heating his house, operating a vacuum cleaner, running a moving picture machine and a phonograph and supplying himself with countless other conveniences not found in the average home. He has devised mechanisms for mixing bread, freezing ice cream, polishing silver, sharpening knives, chopping meats, slicing potatoes and even electrocuting mice. He has an apparatus for drying hair after a shampoo, an electric fountain for table decoration and is still working on new things.

The engine which supplies all the current for these operations is of the four-cycle, water-cooled gasoline type. It is directly connected to a five-kilowatt generator, supplying direct current to 115

volts. While the saving and convenience is great, the initial cost of installing such a plant is prohibitive for the average house-owner. Mr. Wells has figured out a "block system," intended to cover a block of ten residences, by which the cost of electric current for all needed purposes can be supplied to each at the rate of one-tenth cent for a kilowatt hour, as against the 10 cents charged by some municipal electric companies.—Pittsburg Gazette.

"America's Electrical Week"

"America's Electrical Week" has been selected by the campaign executive committee as the official name for the great electrical celebration, December 2 to 9, 1916. A start has already been made on the nation-wide campaign which from every indication will surpass even the wonderful results accomplished by the 1915 "Electrical Prosperity Week."

The history, and how results were obtained by the different interests during the week of 1915, has been published by the Society for Electrical Development in a most attractive 52-page book entitled "The Story of the Week." The book has been given a complimentary distribution of 25,000 copies. It will be of great value as a guide to local committees during the 1916 campaign.

The name "America's Electrical Week" was chosen this year because of its timeliness, the patriotic thought it conveys, the national aspect the name indicates, its euphony, and its appeal to every citizen. The date is practically the same as that of last year, which was generally conceded to be the best time of the year, as it began the Christmas drive for big business.

"Electrical Prosperity Week" was again considered for the name, but while it splendidly served its purpose last year with prosperity as the theme, this year it was thought it would be advantageous to use a different name, and "America's Electrical Week" met with the approval of both the campaign executive committee and advisory committee.

Architectural Commission

The Los Angeles Board of Supervisors has had under consideration for some time a proposal to establish an advisory board of architects to pass upon architectural plans for county buildings. It is proposed to appoint three to five members of the Southern California Chapter of the American Institute of Architects to act as a county art commission, the members to serve without compensation. The purpose of the commission would be to encourage architectural merit in the design of county buildings, bridges and other structures.

Lighting the Home

By ASBURY REED*

THE proper lighting of the home requires a more intimate knowledge of the reflection and diffusion of light on the part of the illuminating engineer than for the lighting of a cathedral.

There are so many psychological as well as artistic situations to emphasize or to harmonize, and which are seldom taken into consideration by the architect. This is proven by the frequency with which architects relegate the lighting of an inspired interior scheme to some commercially interested or subsidized electrical engineer, the results of which are so out of harmony as to obscure his art. This is due to the fact that the electrical engineer does not comprehend the art of the architect, simply looking upon his achievement as that of a successful building operation or commercial transaction, and also partly because the architect is not disturbed by the incongruous lighting of an interior which appears to him as being just as beautiful with light as without.

This was only recently very forcibly brought to the writer's attention at a very largely attended meeting of architects, engineers and representative men assembled to consider an extensive and important lighting scheme.

The room assigned for this meeting was a replica of the Council Chamber of the Doges of Venice. One of the speakers of the evening, a really great architect, in extolling the architectural beauties of the room, was so greatly under the influence of the Venetian idea presented by such a perfect example of the architecture of that period that he was totally oblivious to the lighting scheme, whose incongruity was so apparent, as applied to modern conditions and the purpose of the meeting, that it was a cause of remark by many who would not have otherwise taken notice of the lighting scheme, if modern lighting schemes had not been the purpose of the meeting.

By a study of the effects of light and shadow we are enabled to produce by different degrees and color of light the most charming contrasts, and with the aid of furniture, paintings, sculptures, etc., suggest comfort, coziness, cheerfulness, reverence, the seasons, dawn, dusk, etc., or emphasize any artistic feature and make obscure some objectionable corner, alcove or pillar.

In the same manner the artistic sense in a house may be destroyed by immoderate lighting and this may consist of too much or not enough, or a sameness throughout as evenly diffused light as from indirect lighting.

It is not the intention to give here the

*Mr. Reed is District Manager in San Francisco of the Luminous Unit Co., St. Louis.

method used in producing any desired result, but a recommendation of how to pave the way for artistic lighting, and the modest home can be more adequately and properly taken care of with as small an outlay for fixtures by consulting the illuminating engineer as by ignoring his existence, and with less regrets; keeping in mind that the gas or electric fixture is not primarily intended for an ornament, while in some cases it is necessarily a work of art. The most necessary thing in lighting the home is thought and the best plans are the result of a tour of the building, either actual or imaginary, with its occupant, determining the finish of the woodwork, the color and design of the wall coverings and hangings, the purpose of this room, its arrangement and how it is to be furnished and the "period" in which it is to be furnished (some parts must be antique to be modern), the location of windows and doors, and the view to be left open or obscured.

Provision in the position of outlets should always be provided for, so that changes can be made quickly and inexpensively. Then the monotony of a "set" arrangement of furniture, by not being able to rearrange the furnishings and light, is not likely to occur.

Los Angeles Architects' Meeting

J. Constantine Hillman, architect, of Pasadena, gave an interesting description of his transcontinental motor trip before the members of the Southern California Chapter of the American Institute of Architects at their April meeting. Mr. Hillman traveled from Pasadena to New York by way of the Lincoln Highway.

At the business session, a report of the committee on competitions, committee on ethics and practice, and board of directors was read. Mr. J. E. Allison reported that the members of the Chapter were loyally supporting the ethics and rules of the Institute in refraining from participating in competitions which were not conducted in accordance with the Institute rules.

The Chapter voted to recommend that an amendment be made to the building ordinance to permit the use of unannealed wire for spiral reinforcing in concrete construction as asked for by Mr. Albert C. Martin. The reason for asking for the amendment is that it is impossible to obtain annealed wire at present.

Upon a motion by Mr. John C. Austin, the secretary was instructed to send communications to the Builders' Exchange and old Master Builders' Association commending them upon the stand their organizations had taken in adopting a rule that their members should confine themselves to contracting and would not be permitted to make plans or engage in architectural work.

New Orleans Objects to Pacific Coast Lumber Trade With France

Building Review, New Orleans

While, certainly, with world affairs in the chaotically unbalanced condition in which they are today, even such could be possible, all reasoning minds can but regard with skepticism the press dispatches from Los Angeles, Cal., published recently, wherein it was stated that "Pacific Coast lumber will be used to line the trenches in France," provided lumber interests of Los Angeles, San Francisco and Portland "can organize a pool to execute a contract with the French government for 200,000,000 feet of lumber for trench and railroad work."

The matter of husbanding their finances now is paramount in importance to the warring nations of the old world, with that of the most expeditious supplying of imperative and immediate needs of this character. It is, therefore, in the light of these facts, extremely difficult, if not utterly impossible, to conceive any plausibleness in the report to the effect that France contemplates going all the way to the Pacific Coast for such lumber as that nation may need for trench work and other war purposes.

To obtain its lumber on the Pacific Coast would mean that France would have to carry it almost half way around the globe, since it now is, and probably will be for quite a while to come, impossible to take it through the Panama Canal because of the stoppage of the big ditch by the land slides. Not only would the cost of transportation be tremendous, but incalculable precious time would be wasted, unnecessarily, in such transportation, to say nothing of the added uncertainty of safe delivery over such a long route.

When one stops to consider the fact that France, or any other foreign nation, can supply its needs of this kind in Southern markets—in New Orleans or in any other section of the lumber producing portion of the Mississippi Valley and adjacent territory—at prices which can not be discounted anywhere in the world, and can secure shipment from this section as promptly as from any other, over the shortest and most economical route possible, it seems utterly unbelievable that the French government could even contemplate going to such a remote point as the Pacific Coast to supply its needs in the lumber line.

That there will, or would be delays in shipments out of this and other Southern ports, there can be no question, owing to the paucity of merchant ships available, but this is an impediment which exists to the same extent on the Pacific and Atlantic coasts as on the Gulf Coast. * * *

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San Francisco to Have New White Way

EARLY last fall the Downtown Merchants' Association of San Francisco concluded that a new lighting system was needed along Market street, the main thoroughfare of the city. W. D'A Ryan, who was chief of illumination for the Panama-Pacific International Exposition, was requested to design an effective means of illumination. After a

Proposed Lamp Standard for Market Street, San Francisco

thorough study of the conditions Mr. Ryan recommended the use of luminous arc lamps mounted on standards to be supported by the existing trolley poles along the street. Each standard carries three lamps mounted in the form of a triangle with its plane transverse to the street as is shown in the accompanying illustration which shows the type adopted.

This ornamental standard is to replace the present top piece. It carries three luminous arc lamps provided with a new form of glassware to better diffuse the light. The standards are 29 ft. in height and are to be spread at an average of 110 ft. intervals on either side of the street. In the 1.42 miles from the Ferry to Seventh street, 137 poles will be thus equipped. In addition 16 lamps are to be installed on four standards in front of the Ferry Building by the Board of Harbor Commissioners and four 3-light standards will be erected by the Palace Hotel along New Montgomery street.

The system is to be installed by the Pacific Gas & Electric Company, including lamps, cable, rectifiers and other station apparatus, at a cost of approximately $100,000. The top light on standard is to be wired on a separate circuit and is to be maintained by the city as an all-night light. The two side lights are to be maintained jointly by the merchants, property owners, United Railroads and others.

This system will make Market street one of the most brilliantly lighted thoroughfares in America. The three-lamp units will give about fifteen times the present illumination with a current consumption three times as great. Each lamp develops 1900 c.p. at a current consumption of 530 watts, though the tinted glass globe will absorb about a quarter of the light. Not only will the street and sidewalks be illuminated, but also the full facade of each building.

The luminous arc lamps are those which were used at the Panama-Pacific International Exposition. Similar lamps, though not so many in such an area, have been installed in over a hundred cities, something over fifteen thousand units now being used for street lighting.

The new system will be known as the San Francisco system and is said to be scientifically correct. It is decorative and will give Market street the appearance at night that it should have, a distinction and tone in keeping with its character.

New Art Museum

Mr. M. H. DeYoung, proprietor of the San Francisco Chronicle, has announced that he will present the city of San Francisco with the first unit of a new Museum Building to be erected in Golden Gate Park, the structure to cost not less than $50,000. The building will house a valuable collection of paintings and other art treasures which have been collected by Mr. DeYoung and others. It is understood that the plans for this building will be made by Louis C. Mullgardt, who was the architect of the Court of Abundance at the Panama-Pacific Exposition.

Interesting and Readable

The following letter from the National Steel Products Company of New York is self-explanatory:

Your February number to hand. It certainly is most interesting. It is so readable. Other technical papers are so dreadfully technical. There is a human interest running all through your magazine.

STANDARD WARNING SIGNS, PORTLAND, OREGON

Standard Warning Signs on Portland (Ore.) Streets

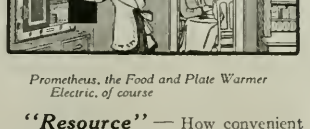
As an outcome of the traffic study made in Portland a couple of years ago, a safety-first movement was inaugurated by the city which has resulted in placing 265 warning signs bearing 16 different legends, as illustrated herewith. These signs are placed at various points throughout the city. The unit cost of the signs was as follows:

	Labor.	Material.	Total.
Signs 18 in. in diameter..	$0.30	$0.31	$0.61
Standards, 1½-in. pipe...	.08	.92	1.00
Assembling and erection..	.65	.05	.70
Total	$1.03	$1.28	$2.31

The street signs previously erected by the city are of baked enamel on sheet metal and, while of very good appearance when new, are not durable in outlying residence districts. When subjected to abuse the enamel scales and the metal becomes rusty. By painting and varnishing a heavy sheet metal a much more durable sign has been made at considerably less cost. One hundred and sixty-one such signs were completed at an average cost of 18 cents, compared to 29 cents for the enameled sign.

Yosemite Park Buildings

Edwin J. Symmes, Pacific Building, San Francisco, has prepared plans for a group of buildings to be erected in Yosemite Park for the Desmond Park Service Company. These structures are in addition to the large hotel being designed by Architect Louis C. Mullgardt. Mr. Symmes' commission includes a $50,000 hotel to be erected at Glacier Park, a garage, laundry, swimming pool, market, stores, and post office. All will probably be of frame construction, with special type of roof to stand the unusual weather conditions that prevail during the winter months in the Yosemite Valley. The work will be done either by day labor or contract.



Prometheus, the Food and Plate Warmer Electric, of course

"Resource" — How convenient at the moment of delay to be able to conserve those qualities of the meal or luncheon which make for their success. Recourse to the Prometheus Food and Plate Warmer has helped many a hostess maintain her poise and good nature when belated guests "keep things waiting" or unlooked-for-friends drop in. It's a necessary "part of the house." Let us tell you why.

M. E. HAMMOND, Pacific Coast Representative
217 Humboldt Bank Building, San Francisco.

***The* Prometheus Electric Company**

California Leads in Road Building

WITH a total expenditure of $14,670,614, from all sources, California spent the second largest amount of money in road construction of any State in the United States, and, according to a compilation of figures by the San Francisco Chamber of Commerce, the City and State authorities, issued recently California now leads every State in the United States in mileage of good roads.

This has proven profitable, in that several of the larger automobile concerns of the East have established branch houses in territory adjacent to San Francisco and still further extensions are contemplated. According to plans which are now under consideration by the State legislature a sum almost double the foregoing amount will be spent during the present year.

The Empire State (New York) leads the states of the United States in the amount of money expended on road work during the year 1914, the aggregate being $29,890,472. Of this amount there was only $15,000,000 available for the continuation of the work in 1915.

In California road construction, according to statistics compiled by the Department of Agriculture, the work of the last year has been but a forerunner of what must, perforce, be finished in 1916. Construction on a highway that will connect San Diego and the northernmost points of the State is well under way and it is expected will be finished by the latter part of 1916.

San Francisco, in all plans compiled by the State for the forthcoming year, is the terminus of all road construction. In several instances the State program includes a number of branch lines that are now covered by railroads. It is believed that this road construction is contemplated to allow motor trucks the right of competition with railways.

That it will only be a matter of a few years until all of the roads of the United States will be surfaced and ready for automobile traffic of all kinds is evinced by the statement that on the first of December last year there was a total in excess of 2,500,000 miles of public roads in all of the States and of this amount there is more than 10 per cent surfaced, by both State and Government, in order to allow the free passage of automobiles at all seasons of the year.

THE SPENCER TURBINE VACUUM CLEANER
SAVES MONEY
Easily installed in old as well as new buildings—Operates by Electricity—Twelve sizes ranging from ½ to 40 horse power.
HUGHSON & MERTON CO.
AGENTS
530 Golden Gate Ave.
San Francisco

According to figures compiled by the California Development Board and the Chamber of Commerce, there are at the present time, in all of the States with the exception of Indiana, Mississippi, South Carolina and Texas, laws providing for State aid in road work, and in these States such laws are under consideration in the forthcoming sessions of the State legislature.

That the next five years will see a great network of State and Government roads, suitable for the passage of automobiles for all purposes, is shown by the fact that thirty-eight States made available $54,884,007 for road construction work in 1915, and that the amount has been almost doubled for 1916. The advent of a system of good roads throughout the United States is viewed with a great deal of alarm by railroad officials, as it is believed that eventually these roads will make possible the transportation of freight via the auto route that heretofore has proven a great source of revenue to the railroad companies.

Mr. Ellery Has Claim

A newspaper dispatch from Sacramento states that former State Engineer Nat B. Ellery has presented a claim against the State for $12,417.30, as compensation for the use by the State of a flexible mattress patented by him and used in the protection of levees. Ellery claims that his invention is now being used as a revetment on the slope of the bank of a levee along the shore of Eel river in Humboldt county. The placing of the mattresses took place during 1914-15.

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INTER-PHONES
Facilitate Executive Supervision
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ALL PRINCIPAL COAST CITIES

To Be "Low Bidder" Not Always Our Aim.

Our most particular attention is given to prompt and skillful handling of all electrical work of any nature with "QUALITY AND SERVICE GUARANTEED."

Our nation-wide organization and large experience in this field assures you always of fair estimates and absolute satisfaction.

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Electrical Contractors and Dealers

Display Rooms, Retail Department and Offices

O'Farrell and Mason Streets — SAN FRANCISCO

In Planning a Residence

the *maximum* in hot water comfort and convenience can be attained by specifying a "Pittsburg" Automatic Gas Water Heater. The "Pittsburg Way" of supplying hot water "Quick as a Wink" for domestic and personal needs, will meet the approval of the most discriminating client.

"Pittsburg" service luxuriates the ordinary conveniences of the toilet. Efficiency in the kitchen and laundry is greatly increased if a "Pittsburg" heats the water.

The "Pittsburg" is ***guaranteed*** mechanically perfect, is easy to install and requires little or no attention after it has been connected to the hot water piping.

Pittsburg Water Heater Co.

Phone Sutter 5025

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"PACIFIC SERVICE"

LIGHT HEAT POWER

Pacific Gas & Electric Co.

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SAN FRANCISCO

PACIFIC PHONE
Sutter 140

HOME PHONE
C 0011

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Average Day's Work for the Carpenter

For an eight-hour day a capable carpenter will be able to accomplish any one of the following items, according to an exchange: Put 400 to 900 sq. ft. of material for a balloon frame; framing and putting up roof 300 to 700 ft. material.

Horizontal rough sheathing 700 to 900 ft., and if placed diagonal half of this.

Matched rough sheathing 300 to 700 ft., and if placed diagonal half of this.

Rough roofing about 1000 ft., and if matched 800 ft.

Rough flooring 1200 ft. and 4-in. matched flooring 500 ft.

2¼ in. matched hard wood, one room 10x12, 12x12, 12x14 ft. laying up to base.

Clapboarding 4 ft., 5 ft. and 6 ft. lengths milled ends 50 to 200 sq. ft. of wall.

These clapboards are 4½ to 5½ in. wide and laid 2½ in. to the weather.

Of 6-in. clapboards unsquared ends laid 3¾ in. to weather the same number of square feet should be laid.

Two thousand to 2500 shingles on ordinary roofs; compound roof half of this.

Twelve hundred ft. on side walls keeps a man hustling all day.

Seventy-five to 100 lineal ft. 4-member cornice; double this for corner strips.

Set eight to twelve window, door or door jamb frames, and fit and hang sash for these four doors with three butts and mortise lock, 2 ft. 6 in. x 6 ft. 6 in. and larger.

Will case with Eastlake one side of opening an hour; ¾ door 5/4 window.

Will base two members three times as many rooms as he will floor; three members twice as many.

Will fit and hang one pair of sliding doors, but twice as many single doors. Will put up track for either of these.

Advance in Cost of Blue Prints

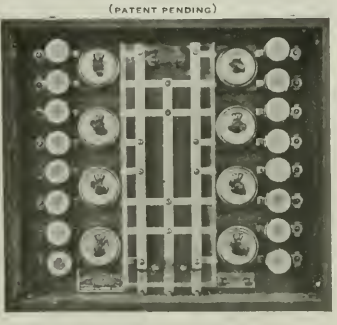
According to present tendencies it would seem that the price of blue-print paper and blue prints is likely to advance in the near future, due to the increase in the price of all chemicals used in the blue-print process, as well as to the heavy advance in paper. As is well known, blue-print paper is coated with an emulsion of iron and potash salts, which are combined by the action of light, and upon immersion of the paper in water the coating is precipitated on the surface of the paper in the form of Prussian blue.

According to the New York Commercial, red prussiate of potash, which is the form of potash used in the blue process, has been made exclusively in Germany. Before the war it sold for 19c a pound; today it is practically unobtainable at $7 per pound, or an advance of 3500 per cent. Citric acid, from which the citrates of iron and ammonium are made, has advanced 150 per cent, and oxalic acid from which the oxalates of iron are also made has advanced 1000 per cent in the same time.

James W. Plachek Busy

James W. Plachek, the Berkeley architect, has completed plans for a $50,000 four-story frame and plaster apartment house to be erected at University and Milvia avenues, Berkeley. There will be 42 apartments and five stores. Mr. Plachek has also made plans for a large creamery building to be erected at Telegraph Avenue and Stuart Street at a cost of $20,000. The Shuey Creamery Co., Inc., are the owners.

DEMCo
SAFETY FIRST
PANEL BOARDS
(PATENT PENDING)



The only logical panel board embodying absolute SAFETY from shock or accidental contact with live metal parts and particularly adapted for apartment houses, school buildings, churches and department stores.

DRENDELL ELECTRIC. & MFG. CO.
169 ERIE STREET SAN FRANCISCO

THE INVINCIBLE VACUUM CLEANERS
Comprise the Largest and Most Complete Line of Vacuum Cleaning Machinery on the Market.
They also Stand First in Simplicity, Efficiency and Durability
R. W. FOYLE, General Agent
416 Harriet Street Telephone Park 2667 San Francisco, Cal.

John D. McGilvray

Mr. John D. McGilvray, for the last twenty-three years one of the leading contractors of the Pacific Coast, died at his home on the Stanford campus March 24th, after a brief illness. Among McGilvray's achievements was the construction of the City Hall in San Francisco, the monument to the city's rebuilding after the fire of 1906. It so happened that the last stone of the building was to have been put in place on the day that McGilvray passed away. A high wind prevented its placement, however.

Among other buildings that McGilvray constructed in San Francisco are: The Emporium, the Claus Spreckels and the Flood buildings; the St. Francis Hotel, the Union Trust, the Mutual, and the First National Bank buildings and the new United States Custom House, as well as many other smaller public and private buildings in the city. McGilvray was the contractor for the greater part of Stanford University buildings, having constructed the outer quadrangle, the Stanford Memorial Church and the Stanford Museum, the chemistry and other edifices.

A Tribute to John D. McGilvray

Perhaps the world is not better for having had John D. McGilvray, but certainly it is not worse.

If all men and women were as serious and as steadfast of purpose as was our friend then the particular achievements to his credit would now pass unnoticed.

Some of us must pull one way while others pull the other way. Life is a continuous tug of war. Mr. McGilvray was a valiant warrior, and an uncompromising foe, but he was also a loyal friend. His friendship was always on the side of right, as was his energy and ability on the side of good.

His sturdiness, a fine example of the trait for which the Scotch are famous, was tempered by a kindliness unusual in any race. This kindliness found expression in many ways, but most of all in an instinctive yearning for the finest things both in nature and in art.

He was noted as a builder—a great builder—one to whom this community owes much—a great builder of great buildings, but he was a greater builder of character.

It was here that he was at his best—few men ever came into contact with him without becoming better men.

Is not such a life an inspiration to the living? Is it not great to have left such an heritage?

WILLIS POLK.

Passing of Walter Cook

Walter Cook, noted architect, died at his home in New York City on March 25th last, aged 70 years. Cook served on many important artists' juries, including those which decided the competitions for Washington University of St. Louis and the University of California, and for the remodeling of the United States Military Academy at West Point. He was president of the American Institute of Architects in 1912 and 1913. He designed the residences of Andrew Carnegie and other millionaires in New York City, besides several large office buildings in Minneapolis and Montreal.

Not Liable for Result of Joke

A decision recently rendered by the California Industrial Accident Commission, by which the employer is declared free from liability for the result of a practical joke played by a workman during working hours, is of considerable interest to building contractors in localities where employers' liability laws are in force. The workman claiming compensation was employed in cleaning out a kiln of the California Pottery Company of Oakland, when a fellow workman, as a joke, turned a hose on him. The water, unknown to the joker, was scalding hot, and disabled the victim for a period of forty-five days. In denying his claim, the commission decided that he did not receive his injuries from an act growing out of his employment.

World's Largest Hotel

The largest hotel in the world is to be erected at a cost of $15,000,000 in the heart of the Times Square district of New York. It is to have 2,500 rooms, to cover an entire block front and to be 28 stories high—nearly twice as large as any existing hotel. It has been christened The Commonwealth. Starrett & Van Vleck and Beverly S. King & Shiras Campbell, two firms who have many notable buildings to their credit, are the architects.

An Electrically Heated School

We are indebted to the Heating and Ventilating Magazine for the excellent photographic reproductions of the Idaho high school which appeared in the March number of the Architect and Engineer. The photographs illustrated an article taken from the Heating and Ventilating Magazine on "An Electrically Heated High School."

Big Firm Wants Architect & Engineer File

The following letter from the firm of Graham, Burnham & Co., Chicago architects, and successors to D. H. Burnham & Co., shows how architects value this magazine, and gives the reader some idea of its wide field of circulation:

GRAHAM, BURNHAM & CO., ARCHITECTS
Ernest R. Graham
D. H. Burnham, Jr.
Peirce Anderson *Edward Probst*
Howard J. White *Hubert Burnham*
1417 Railway Exchange, Chicago
March 25, 1916.

The Architect & Engineer of California,
San Francisco.

Gentlemen:

I wish to purchase some of the back numbers of your magazine. If you haven't all of them, please send what you have of the following:

1910 complete.
1911 complete.
1912 complete.
1913 complete.
1914 complete.
1915 January to April, inclusive.

Yours truly,
HUBERT BURNHAM.

Appreciation

Editor, The Architect & Engineer, San Francisco, California.—In looking over a recent number of your magazine I read a most interesting article concerning the work of Architect Smith. I am writing this in congratulation to yourself and to the author of the article, Mr. Cahill, I believe. Smith's creative work was handled in a masterful way by Mr. Cahill and the story appealed to me as a layman and not as an expert or member of the craft. May you continue to publish more such articles, disclosing the trend of architectural art in San Francisco and in all California, and acting as an inspiration to other architects.

I am, Very truly yours,
B. S. SANDERS,
With R. N. Burgess Co.

Two Oakland Apartment Houses

Plans are being prepared by Messrs. Richardson & Burrell, Albany Block, Oakland, for a three-story frame apartment house to be erected at Nineteenth and Alice streets, Oakland, for the Cutting Estate. The site is known as Lakeside Terrace. Building will be designed in the Italian style of architecture and will cost $90,000.

The same architects are preparing plans for a three-story frame apartment house and store building to be erected at Fourteenth and Brush streets, Oakland, for Mr. Ponjade. An estimated cost of $30,000 is placed on the work.

$20,000 Oakland Residence

Millwain Bros., architects, with offices in the Albany Block, Oakland, have prepared plans for a handsome residence to be erected in Crocker Terrace for Mr. William G. Volkmann of Oakland. House will be two stories, with basement and attic, and will have metal lath and plaster exterior and asbestos slate roof. The interior will be finished throughout in white enamel and hardwood floors. The estimated cost is $20,000.

The same architects have prepared plans for a $40,000 three-story Class C apartment house to be erected at the corner of Twenty-second street and Telegraph avenue, Oakland, for Mr. George Smith of Piedmont.

Winner of New York Sun's Competition

The New York Sun's competition for the best plans and design for a reasonable priced country home was won by J. Ivan Dise, a young New York architect who received his training at the School of Architecture of the University of Pennsylvania. He is the son of Joseph Dise, an architect, of Glen Rock, Pa., and was connected with the firms of Hamme & Leber, at York, Pa., and with Welsh, Sturdevant & Poggi, of Wilkes-Barre, Pa., before taking up his residence in New York City. Two years ago Mr. Dise won a prize offered by The Brickbuilder for a design for a $5,000 fireproof house and last year for an apartment house.

DO YOU USE ANY HIGH GRADE
CABINET or HARDWOODS?
WE MAKE A SPECIALTY OF THEM
PRIMAVERA, MAHOGANY, KOA, JENISERO, OAK, ASH, ETC.
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Beach and Taylor Streets, SAN FRANCISCO

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NEW YORK LONDON CHICAGO PITTSBURGH ST. LOUIS SEATTLE TORONTO MEXICO CITY

CEMENT INSPECTION

INSPECTION OF STRUCTURAL AND REINFORCING STEEL

REPORTS AND ESTIMATES ON PROPERTIES AND PROCESSES

CHEMICAL AND PHYSICAL TESTING LABORATORIES

Industrial and Other Notes

Paint Products Corporation to Handle Their Own Paints

The Paint Products Corporation, manufacturers of the well-known brand of L. & S. Cement Paint, are now acting as their own distributors, with offices at the same place as formerly, 606 Sharon Building, San Francisco.

L. & S. Cement, which became famous at the Exposition by its connection in supplying the means necessary to complete the wonderful color scheme displayed there, will hereafter be handled solely by its manufacturers.

The wide distribution of this paint both for domestic and foreign shipment has grown to large proportions, chiefly through the success in its use on such a range of surfaces.

Though raw materials necessary for the manufacture of L. & S. Cement Paint have increased in some instances several hundred per cent, it is still being sold at a moderate price.

All communications must be addressed to The Paint Products Corporation, 606 Sharon Building, San Francisco.

Expansion

Due to the rapidly increasing demand for Pacific plumbing fixtures, it has been necessary to purchase the plant of the Western States Porcelain Co. of Richmond, the present Pacific plants being unable to turn out enough fixtures to supply the demand. The addition of this factory will increase the production of Pacific plumbing fixtures approximately thirty per cent, and it is very probable that more kilns will have to be built in the near future as the demand increases.

Pacific ware has been on the market a comparativly short time, but due to its quality and advantageous location for delivery on the coast, it has won for itself a remarkable name. Pacific fixtures have been installed in such buildings as San Francisco's new four million dollar city hall, the Oakland civic auditorium, the San Francisco Polytechnic High School, Oakland Technical School, Hobart building, Plaza Hotel, Alameda County Infirmary, Franklin School, Oakland, and the Eugene School, Portland, Ore.

Pacific plants now employ approximately 400 men, which means that this industry is supporting about 2000 people on the Pacific Coast.

THE BIG-AN-LITTLE CONCRETE and MORTAR MIXER

Big Output—Little Weight
Big Profits—Little Cost
Capacity 35 Cu. Yds. a Day

All rounded surfaces—no corners for concrete to lodge in. Revolves on ball thrust bearing, hermetically sealed to prevent grit from working in.

Equipped with levers for turning over and locking device to hold drum in place while mixing.

EDWARD R. BACON COMPANY

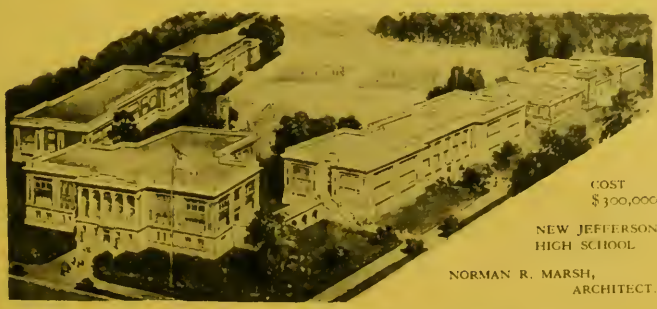
Pacific Coast Agents

51-53 Minna St., San Francisco Tel. Sutter 1675

BUTTONLATH

— has been selected for use in the two most important groups of School Buildings ever erected in the City of Los Angeles. Another testimonial to its superior fire resisting, insulating and other qualities.

NEW LOS ANGELES HIGH SCHOOL, JOHN C. AUSTIN, ARCHITECT. COST, $475,000.



COST
$300,000

NEW JEFFERSON
HIGH SCHOOL

NORMAN R. MARSH,
ARCHITECT.

BUTTONLATH is an improved lathing material that is being rapidly adopted for use in all classes of construction. It prevents plaster cracks, lath stains, etc.; saves money, plaster and repairs.

Ask us for samples and full details

PIONEER PAPER CO. *Pacific Coast Distributors*

Hearst Bldg., San Francisco **247 S. Los Angeles St., Los Angeles**

YOU ARCHITECTS
have great responsibilities

You are held directly responsible for every part of the work.

The contractors — the carpenters — the plumbers and others all gracefully sidestep any complaint by referring the builder to you.

It isn't a question of whether or not you are legally responsible for the failure of any fixture to do its work satisfactorily.

It is a question of future business — of holding and building a reputation — of making every client of yours a booster.

Your only recourse is to the manufacturer. If he fails to realize the importance of your position — If he refuses to replace the unsatisfactory fixture — or only does so after a long drawn out investigation, your client becomes dissatisfied. The possibility of future work becomes small.

We fully realize the importance of your work, and are at all times ready to co-operate. With us there can be no long drawn out investigation. Our main offices and factories are right here on the coast. Any defective fixture can be replaced immediately. You do not have to wait for transcontinental shipments.

Our guarantee fully protects you, for all the "Pacific" line is guaranteed forever against any defects in workmanship or materials.

"Pacific"

Plumbing Fixtures

Display Room,
67 New Montgomery St.
SAN FRANCISCO

Factories,
RICHMOND,
CALIFORNIA

MODERN PLUMBING FIXTURES

HAINES, JONES & CADBURY CO.
MAKERS OF PLUMBING SUPPLIES
1130-1144 RIDGE AVENUE PHILADELPHIA
BRANCHES - SAVANNAH AND SAN FRANCISCO
San Francisco Office and Showroom
857 Folsom Street

Victory for Buttonlath

The San Francisco Board of Supervisors on April 10 went on record as favoring the use of Buttonlath for partition work in all classes of building construction and the municipal building ordinances have been amended accordingly. This is not a step backward, as some would make it appear, but is a step forward in the interests of good building construction, according to the unbiased opinion of those who are in a position to know.

Buttonlath, while admittedly a plaster board, is not like all other materials of that name, in that it possesses, by reason of the buttons, one and one-half inches on centers throughout the entire board, not only a mechanical bond but a suction, thereby securing a perfect bond for the plaster. Buttonlath, according to its manufacturers, possesses wonderful insulating qualities and is also a splendid fire retardent.

The amended San Francisco ordinance was passed after a long, hard fight, the opposition coming from the manufacturers of metal lath, whose interests, it is claimed, would be injured to a considerable extent should the use of Buttonlath become general. Notwithstanding the opposition, together with the publication of paid advertisements in the daily newspapers discouraging the use of plaster board, the Supervisors voted almost unanimously in favor of the use of the material. The campaign conducted by the opposition has had rather a disastrous effect upon the city's good name in that it has given the average citizen the impression that an attempt was being made by the Supervisors to bring about the use of a material that would endanger life and property.

The very fact that the Fire Chief of Los Angeles has gone on record as favoring this material should satisfy the skeptics for all time. The Fire Chief's letter is as follows:

Los Angeles, May 24, 1915.

Mark Cohn, Secretary Building Ordinance Commission, 24 City Hall, City.

Dear Sir:

Your communication of May 22nd to hand in re. Buttonlath plaster and in reply beg leave to state that I was present at the test made on May 14, 1915, 10 a. m., on the vacant lots located at 2042 E. Fifteenth street, this city, and I was very favorably impressed with the results of the test as demonstrated at that time; and I believe it to be far superior to the metal lath and plaster, both as a fire retardent and as a fire resistant; inasmuch as the test showed that Buttonlath plaster resisted the heat and flames, and also the action of the stream of cold water thrown against it while extremely hot, so much so that the opposite side of the partition from the fire remained firm, with only a slight crack or two, even after a stream of cold water from a line of 2½-inch hose was thrown against the partition while hot, which proves that under ordinary conditions no fire will pass through a partition into an adjoining room if the partition while hot should be hit by a stream of cold water; while with the metal lath and plaster the heat seemed to disintegrate the mortar, and it cracked off on both sides, so much so that when a stream of cold water was thrown against it, both sides of the partition were washed away and the fire could pass through it into an adjoining room.

There is also the additional point of durability in this Buttonlath plaster as against the metal lath plaster, inasmuch as the metal lath plaster in time will oxidize and break away by the weight of the plaster; whereas Buttonlath plaster seems to adhere extremely firm to the Buttonlath.

Yours very truly,

Archie J. Eley,
Chief, Los Angeles Fire Department.

It is suggested that if any further test is desired that same be given upon request of Chief Murphy of the San Francisco Fire Department and the Fire Marshal, both of whom have given the matter thorough investigation. The San Francisco Board of Supervisors deserve congratulations for refusing to be influenced and in the meantime the public will await the use of the new material and its fire-resisting qualities as compared with metal lath and plaster will be watched with interest.

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Splendid Record for Hauser Window

The great success which the Hauser Reversible Window Company has achieved since its introduction some two years ago is shown by the following partial list of buildings in which they have installed their Standardized Steel Hauser reversible Window fixtures:

Dunham, Carrigan & Hayden Co., warehouse, San Francisco; Leo. J. Devlin, architect.

Humphrey Apartments, San Francisco; C. A. Meussdorffer, architect.

Four residences at Forest Hill, San Francisco; Falch & Knoll, architects.

Moran Stores and Apartments, San Francisco. C. J. I. Devlin, architect.

Garage and factory, San Francisco; Smith O'Brien, architect.

South Berkeley School, Berkeley; W. H. Ratcliff, Jr., architect.

North Berkeley School, Berkeley; Coxhead & Coxhead, architects.

West Berkeley School, Berkeley; Walter D. Reed, architect.

Oakland Detention Home, Oakland; Henry H. Meyers, architect.

Alameda County Court House, Oakland; Henry H. Meyers, architect.

Santa Cruz High School, Santa Cruz; W. H. Weeks, architect.

Petaluma High School, Petaluma; Brainard Jones, architect.

Worth School, Porterville; F. W. Griffin, architect.

Three Richmond schools, Richmond City Hall and Nicoll City Hall, Richmond; J. T. Narbett, architect.

Richmond School, Richmond; Stone & Wright, architects.

El Dorado School, Stockton; Stone & Wright, architects.

Woodland Grammar School, Woodland; W. H. Weeks, architect.

Paso Robles School, Paso Robles; W. H. Weeks, architect.

Suisun School, Suisun; Crim & Symmes, architects.

Courtland School, Courtland; R. A. Herold, architect.

Selby Public School, Selby; N. R. Coulter, architect.

Chatham School, Woodlake; J. L. Roberts, architect.

Fremont School, Fruitvale; J. J. Donovan, architect.

Lincoln School, Alameda; Cunningham & Politeo, architects.

Bank building and apartments, Martinez; A. A. Cantin, architect.

Apartments, Martinez; J. T. Narbett, architect.

Two residences at Palo Alto; C. A. Kaiser, architect.

The Hauser is considered one of the best reversible windows on the market, and wherever installed has given full satisfaction. Its operation is accomplished without rattle, noise or breaking of cords, and it never gets out of order.

The Hauser Reversible Window Company maintains offices and operates a factory at 157 Minna street, San Francisco.

Buildings May Play Leap Frog

A news dispatch from Vallejo says:

How can one hoist a parsonage over a post-office?

This is the question engineers are trying to solve. They have thought of using a big crane and hoisting the whole building—but if it dropped it would interfere with the mails. Dynamite, all agree, would hoist it; but the trouble is it might hoist the postoffice, too.

And it has to be moved quick, for they're planning to add two stories to the postoffice, which would make the architectural game of leap frog impossible.

The members of the congregation of the First Methodist Church wish to move the parsonage and sell the lot it is on. The only way it can be taken off the lot is by hoisting it over the postoffice, as it is otherwise surrounded with taller buildings.

DON'T YOU THINK that

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built by a concern that has specialized for thirty-five years in this particular line ought to be pretty near ***RIGHT?***

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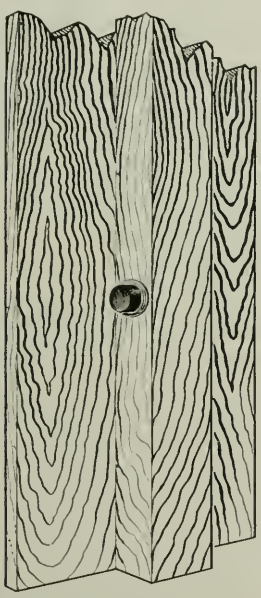
PORTLAND SEATTLE.

Slam! Bang! Rattle! of Doors Stopped

(Contributed.)

THE public and individual in the home, hotel, hospital or office are now able to save the irritation caused when the doors close with a jar and a bang, by using the Ideal Door Check or Buffer.

Heretofore the only protection has been the purchase of one of the many expensive automatic closing checks which are attached to top of doors with lever connection extending from casing of door frame.



Ideal Door Check Inserted in Stop of Door.

These devices are excellent for the purpose intended, (closing the doors) and as is known, they fail to eliminate the noise when door hits stop in frame. Hence the use of the Ideal Buffer with the automatic checks to finish its efficiency. In other words, to take up the work where the other stops. The general use of the Ideal Buffer is to break the jar when the doors are closed, at the same time protecting the woodwork from being marred and also prevents the rattling of doors when lock is loose, the rubber buffer pressing against door, allows no vibration.

The Ideal consists of a metal shell which encloses a special piano wire spring upon which rests a tip of hard composition rubber. The rubber tip is straight beveled near the end, which is concealed within the shell and an eyelet of metal fitting into the end of the shell and forming the lip, meets the bevel and prevents the rubber tip from coming out.

When set in position the only metal part of the Buffer that shows is the lip of the eyelet. This is finished in brass or nickel plated.

This Ideal Door Buffer, owing to its spring construction, affords just the proper resiliency to effectively break the shock of the closing door, but permitting the latch or lock to catch.

The installing of the Ideal is very simple. Simply bore a ⅜-inch hole in door stop, where door hits same and drive buffer in place until flush with woodwork.

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In case of irregularly fitted, warped or heavy doors, it is advisable to use two buffers to each door.

Ideal Door Checks have been recently installed in Hobart Building, San Francisco City and County Hospital, The Adler Sanitarium, German Hospital, many hotels and homes.

It is made in California. Charles H. Fuller is the Western representative, with offices in the Hobart Building, San Francisco.

Will Paddle Their Own Canoe

Mr. A. F. Sinclair and William Laird have withdrawn from the Paint Products Corporation and will put out their own products under name of "Laird & Sinclair Preservative Paints." They make the following announcement of change:

The undersigned have severed their relations with the Paint Products Corporation, and will hereafter have their paints made for them under the trade name of Laird & Sinclair Preservative Paints by a manufacturing firm of long experience and excellent commercial reputation.

We guarantee that our paints will be made according to the original formula by which the L. & S. (Laird & Sinclair) cement paint became so well and favorably known.

When you are in the market for paint, a postal to us will have immediate attention, and we will give you lowest quotations in any color.

We thank you for your past favors, and assure you that a continuance of your patronage will be greatly appreciated, and that from now on our Laird & Sinclair Preservative Paints will be turned out in a uniform and satisfactory manner.

Yours very truly,

LAIRD & SINCLAIR.

History of Fire Sprinklers

Over a hundred years ago, in 1806, an apparatus for the extinguishment of fire was patented by an Englishman named John Carey. This is the first record of any attempt to automatically control fire. In 1809 an apparatus was invented by Sir William Congreve to diffuse water "by bulbs, roses or perforated pipes, with valves in a place of outside security and arrangements for a further supply of water by water mains or by hose connections, with fire engines." Both of these inventions depended on the burning of a cord to release the water, but in 1812 Sir William Congreve projected the idea of using fusible cement and here he laid the principle for the operative functions of the automatic sprinklers. There is no record, however, of either of these inventions coming into practical use. Their failure must have discouraged other engineers, for it was not until 1852 that attempts were again made to invent apparatus for the automatic control of fire. From that time on many attempts were made and patents obtained in connection with the idea. For one reason or another the products failed in practice, but in 1881 Mr. Frederick Grinnell, by his patents, seemed to overcome all obstacles, and the sprinkler he invented, with natural improvements and variations, or sprinklers of a somewhat similar type, are the ones that are receiving the indorsement of fire and insurance officials throughout the world.

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Important to Building Owners

It will no doubt be of interest to readers to know the progress being made by the Fess System Co., in lines other than their already well-known line of rotary burners.

As a result of a great deal of effort in the Laboratory of Thermal Research, they have perfected additional apparatus to cover a field of industrial high pressure steam and also an equipment for use in small residences, by which one is able to use a low grade fuel oil in steam, hot water, and hot air furnaces in particular, without any noticeable sound of combustion. They are operated by small motors, thereby putting the operating cost within the means of small householders.

They have also been able to reduce the cost of manufacture to the extent that the first cost is within the reach of practically all homes that are equipped with furnaces, so as to make it a good investment.

This firm has also recently opened additional branches under the personal supervision of experts, in Santa Barbara and Fresno. This is in line with the usual policy of the company and it is the ultimate intention to open similar branches in all industrial centers. This will result in a great convenience to those using their apparatus, as it means that they will have at their disposal and immediate call experts—when service is required—at the minimum expense.

They now have branches in San Diego, Los Angeles, Santa Barbara, Fresno, and Portland, and agencies at Seattle, Eureka, Reno, and Houston.

It will be remembered that as a result of the excellent display maintained at the Machinery Palace, P.-P. I. E., by this company they were awarded two gold medals, being the highest award for this class of apparatus.

Their equipment was also used exclusively in heating the following buildings in the Expositions at San Francisco and San Diego: Horticulture Building, California Building, and Hawaiian Building, San Francisco; Administration Building and Conservatory, San Diego.

The Fess System Company also maintains a policy which is quite unusual with manufacturers of oil burners in that the guarantee carried by their apparatus is money back in full if the same is not entirely satisfactory or does not meet every requirement claimed, a feature which justifies the endorsement of architects and builders.

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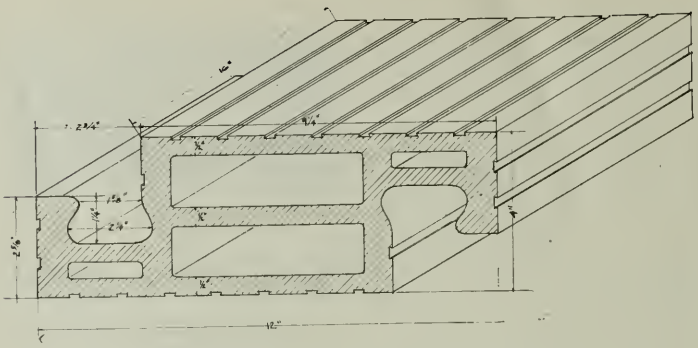

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The Atlas Heating and Ventilating Company, Inc., reports a steady inflow of good business which taxes its output to the limit. As a result the company is planning to increase its facilities by providing additional shop room. This will enable the management to take care of even a larger number of installations of heating and ventilating plants for business buildings and residences. Contracts have recently been signed for heating and ventilating the beautiful new city residence of Julia de la Welch at 2840 Broadway, San Francisco, Willis Polk & Co., architects. Also they have recently completed for the Presbyterian Board the heating and ventilating of the Chinese Mission, 980 Sacramento street.

Other recent and important work includes the following:

Oil plant, heating and ventilating, at Eighteenth and Lake streets, for A. Herrington.

Heating and ventilating for H. D. Hogrefe, at O'Farrell and Leavenworth streets.

Heating and ventilating for Hamagh de Urioste, Van Ness and McAllister, J. C. Hladik, architect.

Heating and ventilating for Girard Investment Company, Geary and Leavenworth streets, San Francisco, Rousseau & Rousseau, architects.

Steam heating systems in two buildings for Dr. C. S. Payne, W. S. Hind, architect.

Hot water plant for Howard Naumann, 927 Ashbury street, San Francisco.

Steam heating plant for A. Penyener, Hyde, between O'Farrell and Ellis streets, San Francisco.

Steam heating plant for Prout McKenzie residence, Broadway and Fillmore street, San Francisco.

Steam heating plant for J. B. Reite residence at Post and Taylor streets, San Francisco.

Steam heating plant for Buck residence, Locust and Washington streets, San Francisco.

Two steam heating plants for Thos. Scoble, one at Geary and Commonwealth and the other at Geary street and Palm avenue, San Francisco.

Steam heating system for E. J. Montgomery, Hyde and Vallejo streets, San Francisco.

Two steam heating plants for Sterner Olson at Leavenworth and Bernard and

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Steam heating plant for M. Curry at Washington, near Polk street, San Francisco.

Two steam heating plants for J. G. Kincannon, at Washington street near Steiner street, and at Post street near Polk, San Francisco.

Steam heating plant for the Tobin residence at Hillsboro, San Mateo County.

Steam heating plant for L. D. Stoff, Sutter and Hyde streets, San Francisco.

Steam heating plant for E. H. Deneke, Bush and Jones streets, San Francisco.

Steam heating plant for H. and I. Wolf, 1250 O'Farrell streets, San Francisco.

Steam heating plant for Erna A. Westerman, at Geary and Commonwealth streets, C. O. Clausen, architect.

Steam heating plant for Levison Co., California and Polk streets, San Francisco.

Steam heating plant for Detention Home and Juvenile Court, San Francisco.

Steam heating plant for O. A. Craemer, Turk and Hyde streets, San Francisco.

Besides all the above they have installed numerous hot air furnaces in private homes in San Francisco and the Bay cities.

"Likwid Sement"

"Likwid Sement" is the trade name given a new preparation which the Imperial Waterproofing Company has commenced to manufacture. It is nothing more nor less than a mixture of high grade Portland cement and sand combined with Imperial, the latter being first applied to the surface, after which "Likwid Sement" is used, giving a smooth stucco or stipple finish as desired. Any shade may be produced, this preparation being as sensitive to color as kalsomine. It can be applied to any material that absorbs water—concrete, stone, brick or wood—and it not only waterproofs and preserves but it is said to give a finish superior to any varnish or cement paint.

Concrete Street Work

Four inches of concrete for a foundation with a wearing surface of an inch and one-half of asphaltic concrete, comprise the specifications for the improvement of Central avenue from Fernside Boulevard to Fourth street, Alameda. The city engineer estimates the cost at $100,000.

POSITION WANTED—By first-class architectural draftsman and designer; fifteen years' experience; reference. R. J. Halbedl, 630 Geary street, San Francisco.

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The credit for Hollow Metal Doors and Trim belongs to Dahlstrom. That we truly originated and perfected and have consistently produced the highest grade of hollow metal interior trim for buildings is not an exaggeration, but an established fact.

Sometimes, in fact quite frequently, we are told: "Cut your estimate and the job is yours!" We are always willing to re-figure and to co-operate with the Architect, Owner and Contractor in an endeavor to lessen cost or to meet a particular requirement, but we are **not** willing to cut an estimate merely for the commercial transaction of signing a contract. Dahlstrom Quality has always been rigidly maintained and this quality will not be lowered for the purpose of securing an order by meeting the figure of a competitor whose product is decidedly inferior.

THE DAHLSTROM PRODUCTS are made right in every particular, and prove not only a source of satisfaction from the viewpoint of excellence in unequaled finish, but the added and greater service of standing up under the severe tests of the two greatest destructive forces known to mankind — **FIRE** and **TIME**.

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MAY 1916

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ENTRANCE, EDISON SCHOOL BUILDING, BERKELEY
W. H. RATCLIFF, JR., ARCHITECT

Frontispiece
The Architect and Engineer
of California
For May, 1916

THE
Architect and Engineer
Of California

VOL. XLV. MAY, 1916 No. 2.

The City of Berkeley's New Public School Buildings

By B. J. S. CAHILL, A. I. A.

Court, Garfield School, Berkeley

THE city of Berkeley is to be congratulated on a feat of school building without parallel on the Pacific Coast. It has just completed five school houses at the surprisingly low cost of $258,148. These figures will be more eloquent of economy when we consider the following facts: All the buildings are equipped with the most modern appliances, each displays both individuality and distinction of design and, lest one should imagine that the low cost is achieved at the sacrifice of working space, the outlay for these buildings per cubic foot is less than ten cents—the range being from 8 1/3 to a little over 10½ cents.

There is a popular notion that if a thing doesn't cost much it isn't worth much. This all depends upon what we mean by cost and what we mean by worth. If we consider the cost of a building in cash and day labor and its worth in rentals, why, then, the Mechanics Bank in San Francisco, which has a plain façade set on a bent colonnade, is no doubt worth much more per front foot than the Palazzo Massimo in Rome, which also has a plain façade set on a bent colonnade. The Bank of Italy now owns the former, but all the banks of Italy combined could not buy the latter, because it is priceless.

No doubt schools could be built of matchboard and battens for five cents a cubic foot in which teaching could be carried on; and no doubt, too, that a cup of beans contains enough proteids and kilowatts of energy for a day's sustenance. But it takes more than mere carpentering to make a school house and something else than chemistry to make a cook.

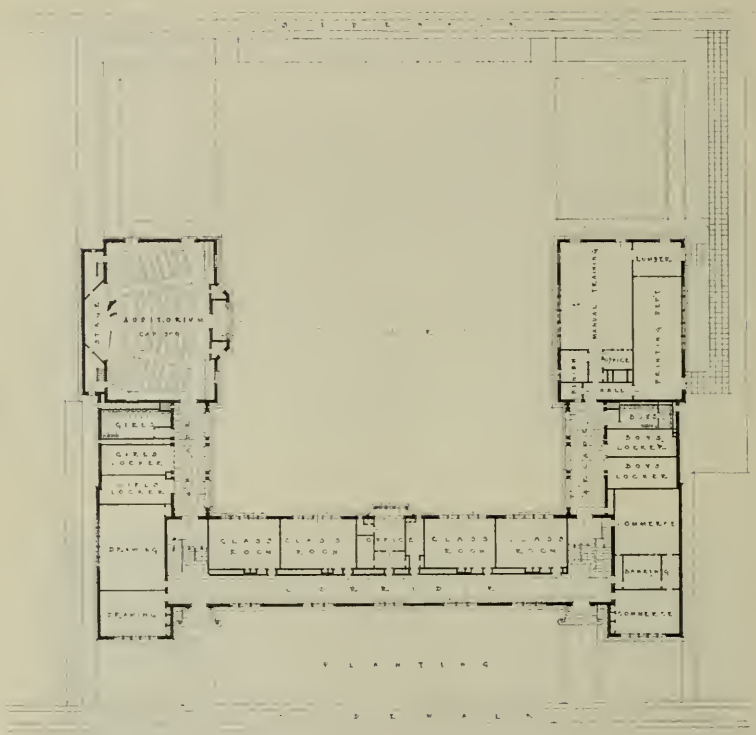
On the other hand, the artistry that puts a value into things not expressible in terms of money does not need expensive material to work upon. Simple materials, whether for feeding, clothing or housing, can all be made precious by the alchemy of art. The persistent tradition that lead or other base metals can be transmuted into gold is a fine symbol of this very thing. This even holds good in the moral world and is the basis of Christianity. The doctrine of the divinity of man really means that god-like possibilities are latent in the humblest and the least of us.

NORTH ELEVATION, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect

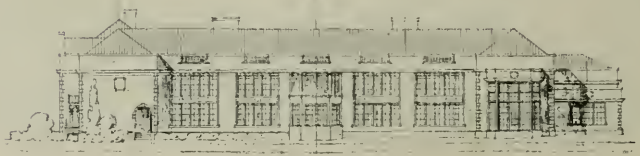
DURAND STEEL LOCKER INSTALLATION IN GARFIELD SCHOOL BUILDING, BERKELEY

SOUTH ELEVATION, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect

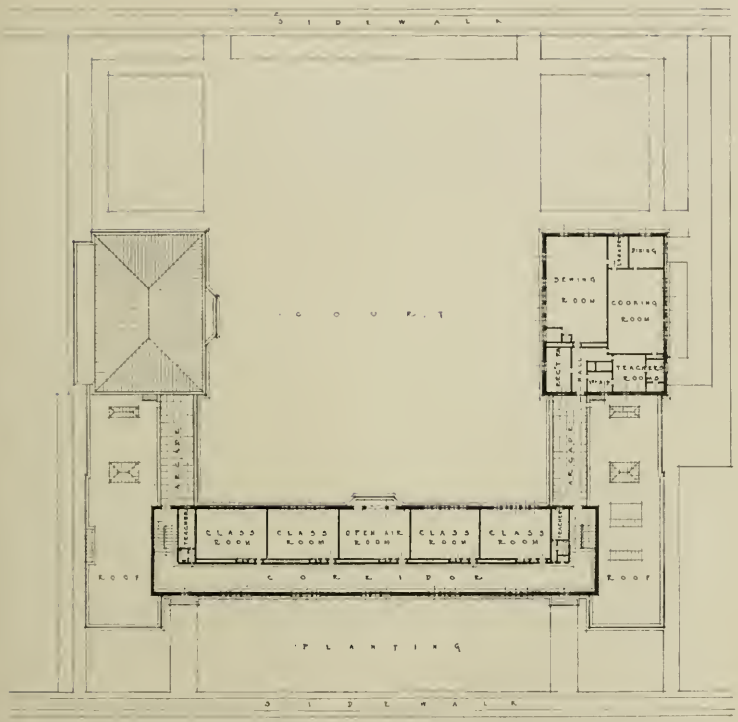
COURT, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect



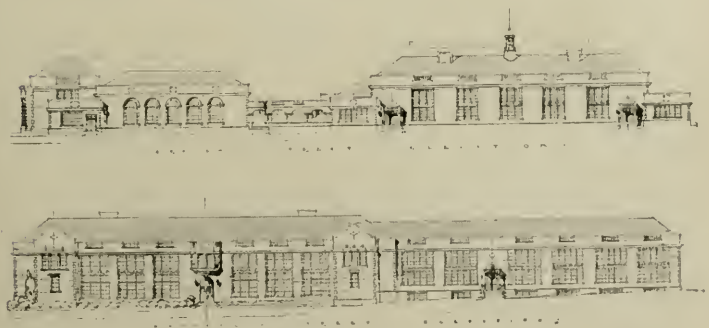
FIRST FLOOR PLAN, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect



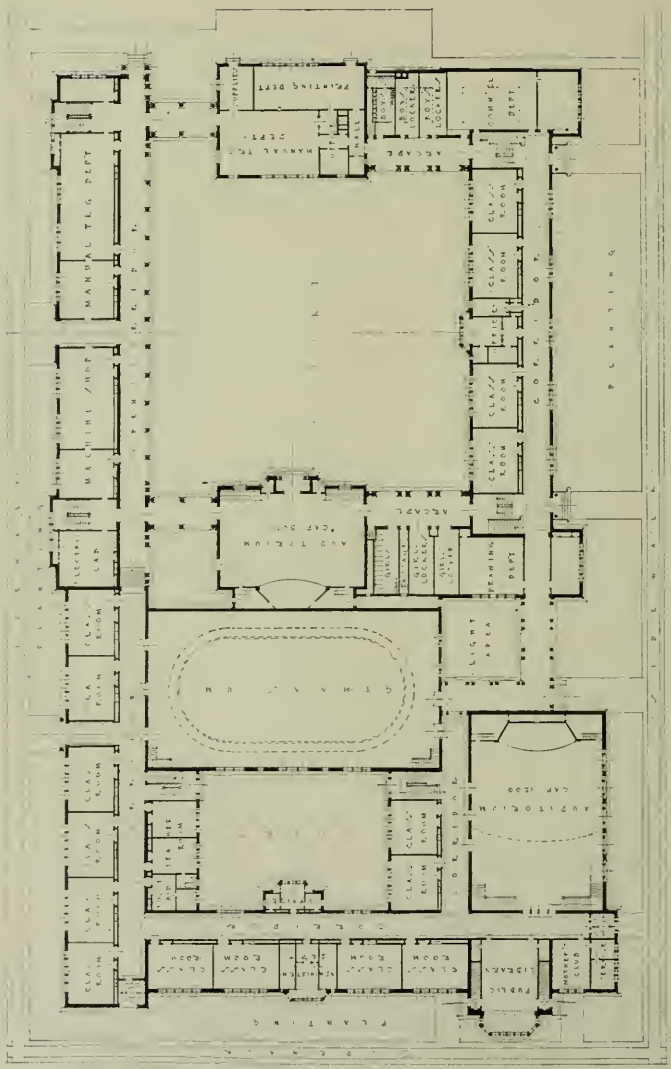
ELEVATION, PROPOSED COMPLETION, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect



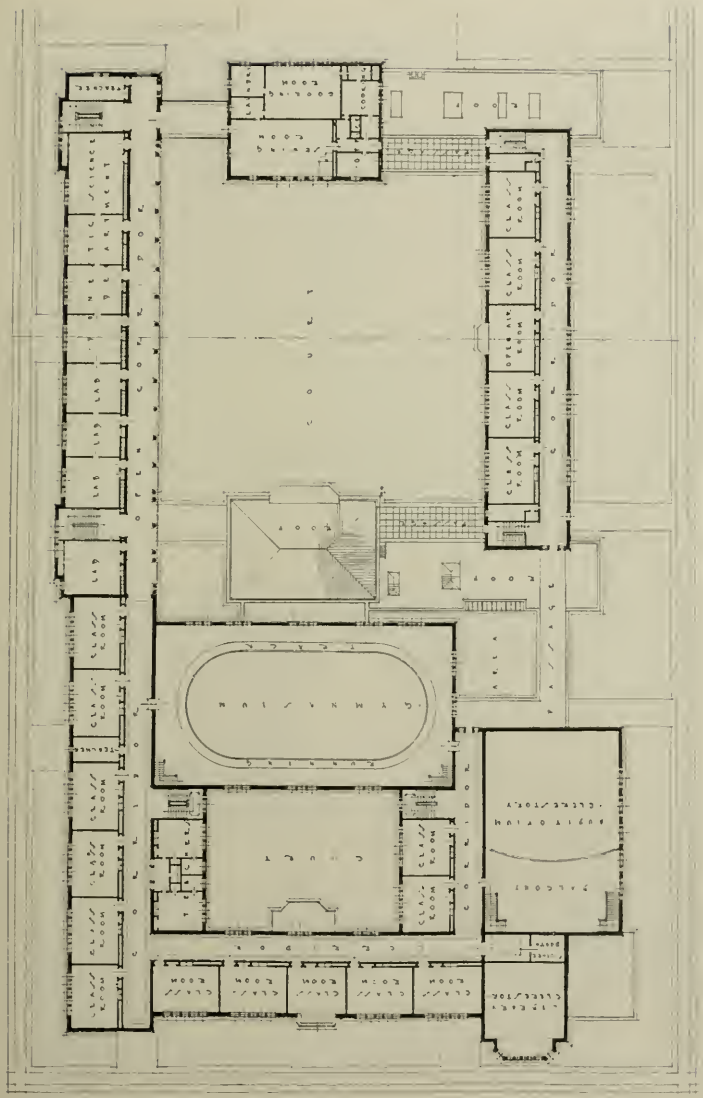
SECOND FLOOR PLAN, EDISON SCHOOL BUILDING, BERKELEY



ELEVATIONS, PROPOSED COMPLETION, EDISON SCHOOL BUILDING, BERKELEY
W. H. Ratcliff, Jr., Architect



FIRST FLOOR, EDISON SCHOOL, AS IT WILL BE WHEN COMPLETED
W. H. RATCLIFF, JR., ARCHITECT

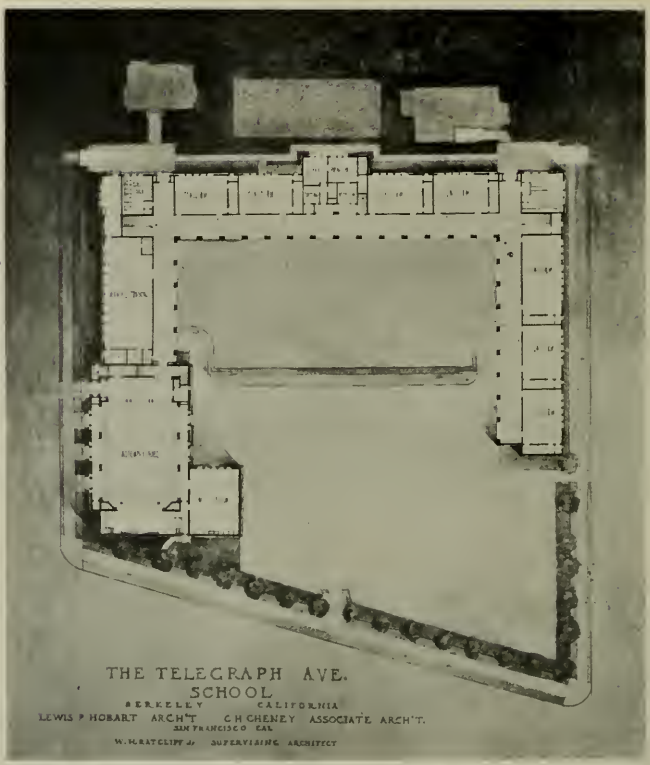


SECOND FLOOR, EDISON SCHOOL, AS IT WILL BE WHEN COMPLETED
W. H. RATCLIFF, JR., ARCHITECT

FRANCIS WILLARD SCHOOL BUILDING, BERKELEY
LEWIS P. HOBART, ARCHITECT
CHAS. H. CHENEY, ASSOCIATE
W. H. RATCLIFF, JR., SUPERVISING ARCHITECT

FRANCIS WILLARD SCHOOL BUILDING, BERKELEY
Lewis P. Hobart, Architect *Chas. H. Cheney, Associate*
W. H. Ratcliff, Jr., Supervising Architect

CORRIDOR, FRANCIS WILLARD SCHOOL BUILDING, BERKELEY



GROUND AND FIRST FLOOR PLAN, FRANCIS WILLARD SCHOOL BUILDING, BERKELEY

Now the function of architecture is to impart to plain building materials when assembled into weather-proof passages and pavilions the divine quality of beauty. In oriental lands and under the sway of despotism and Caesarism, the soul of architecture dwelt only in great palaces and temples. The splendors of ancient Babylon were not for the private citizens. They lived in hovels of mud and wattle. But with the advent of Christianity and the growth of democracy the spirit of architecture began to descend to the humbler uses of every-day life, until finally in our day among the leading nations we aim to put as much harmony and elegance in the poor man's bungalow as formerly was put in the rich man's palace.

Now the theory of evolution, when applied to the world of architecture, reveals the same two great drifts or movements that can be traced in the world of biology; the development of organisms, whether animal or vegetable. On the one hand we find the highly developed and successful species

in process of falling back or degenerating, while others that were lowly and inconspicuous are now world wide and dominant. Just as the saurians have gone back and the simians have come forward, so we see that dominance in architecture no longer reveals itself in huge temples of faith or giant dwellings of despots. But the architectural form developed by priests and princes have been cheapened and degraded to commoner uses. Meanwhile the structures that served the poor and the lowly—the wooden sheds and byres of the farmer, the stone huts of the herder and the woven tents of the nomad—have gradually been developed and glorified as the common people grew prosperous. And it is a remarkable fact that any bit of building you look at, and you can try the experiment all day long with never-failing interest, bears on its face unmistakable evidence of being either descended from palatial and grandiose prototypes or developed up from simple structures of the common people. The original classic orders and their variants done in cut stone can be traced in various forms, diluted and cheapened, down the line to the formal villa dear to the French, the thin Colonial of New England and the near classic school houses spread over the West. These buildings eke out the classic tradition with stucco and sheet metal, and often convey the air of that rather pitiable human object, the reduced gentleman in the shabby gentility of ruffled silk hat and a frock coat frayed at the edges. The signs of the architecture of common origin can be just as easily detected. In the main they consist in frank glorifications of common materials such as brick, rubble, plaster, naked timbers and cheap—that is, small pane windows. Its forms are derived from cottage and farm house accretions of gables, lean-to additions, dormer extensions of roof, outhouses and porches. In effect we get the picturesque in place of the formal, variety and color of texture and surface instead of the abstract forms in carving and mouldings and sleek finish. In some instances, of course, the two movements meet each other, as it were, and mingle. Thus common brick design, originating in Holland, when united to late Gothic or early Renaissance forms, resulted in the Tudor manorial or the Georgian Colonial styles. The Spanish Colonial was based on reminiscences of the grand manner possible to an isolated community without books or near-by examples, coupled with the necessity of using adobe bricks, rough-hewn beams and untutored workmen. The half timbered, small window paned, many gabled, plaster panelled type is wholly bucolic in origin, although its elements have been formalized and drilled into a precise and symmetrical type of design by Frank Lloyd Wright, just as another architect a generation or so ago created a style by chamfering beams and putting beads on battens until a formal Eastlake style was evolved out of the ordinary elements of a barn made of posts and planking.

Now it is very interesting to note how this architecture of humble origin has, of late years especially, been developed all over the world—the strong men, as it were, taking more kindly to this school, while the men of feebler purpose followed in the dried up channels of classic tradition. Exactly the same thing happened in literature towards the end of the middle ages, when the school men wrote their thoughts in feeble and degenerate Latin, while the strong men with a real message wrote in the vulgar tongue and so made way for Shakespeare, Montaigne and Cervantes. Bacon, as we know, wrote in both tongues, just as some of our architects design in the dual modes above indicated.

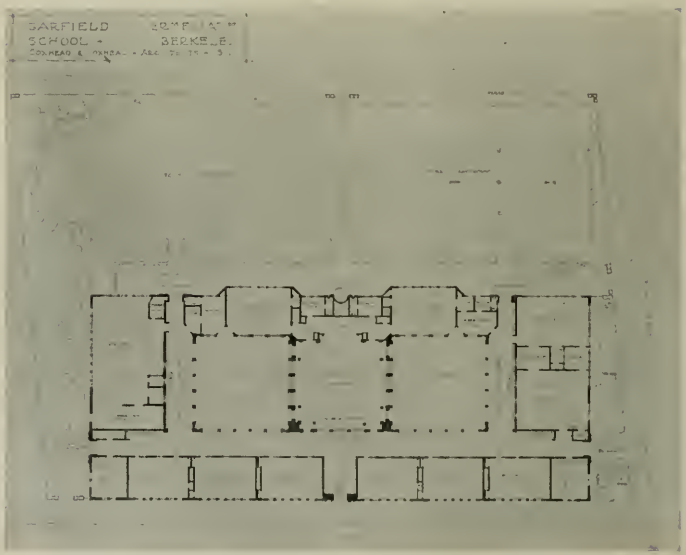
While this preamble seems to have taken us far afield, the mental excursion is not without profit and not without direct bearing on the five new Berkeley schools under discussion. Until quite recently here in California

GARFIELD SCHOOL BUILDING, NORTH BERKELEY
COXHEAD & COXHEAD, ARCHITECTS
H. H. RATCLIFF, JR., SUPERVISING ARCHITECT

GARFIELD SCHOOL BUILDING, BERKELEY
Coxhead & Coxhead, Architects *W. H. Ratcliff, Jr., Supervising Architect*

COURT, GARFIELD SCHOOL BUILDING, BERKELEY
Coxhead & Coxhead, Architects *W. H. Ratcliff, Jr., Supervising Architect*

CORRIDOR, GARFIELD SCHOOL BUILDING, BERKELEY
Coxhead & Coxhead, Architects *W. H. Ratcliff, Jr., Supervising Architect*



PLAYGROUND AND FLOOR PLAN, GARFIELD SCHOOL, BERKELEY
Coxhead & Coxhead, Architects *W. H. Ratcliff, Jr., Supervising Architect*

the strong architect did not get into the school game. Not because the problems were not attractive, but because the client, in the person of the average school director, is usually too small to get into harmony with a broader man. You cannot run a narrow gauge car on a broad gauge track. Big architects can only live among big patrons. By just what process the Berkeley authorities chose a really first-class man for their city architect I personally do not know. It may have been an accident. The usual defense made by the average director or councilman when accused of overlooking men of conspicuous talent is that such men are not safe; that they assume to "know it all"; that they overdo the artistic side; that they do not inspire business confidence, etc. The dullards of each day and generation since and before the glacial epoch have made exactly the same arguments. As a matter of fact, the dull man lays emphasis on the accidentals of routine, method, card indexing, etc., because he has little else to offer. The really capable man appears to minimize all the things as merely the accidentals. He has something much more important to take up his real interest. But when he really does turn his attention to matters of routine how he illuminates and vivifies them with clear-headed and workable ideas! The man with brains enough for creative architectural design can more than master all the minor technicalities that a first-class design involves. Any contrary belief, however commonly entertained, is nonsense and nothing else. It is the doctrine of dullards who are jealous of brighter men.

A fine example of a masterful and trenchant handling of the very complex and practical problem of building a lot of schools for a limited amount of money is right here before us. Plenty of men could have solved one-half of the problem and given us the cheap buildings. Plenty of other men could have performed the other half and handed us charming designs. Very few could have worked the miracle of doing both.

Just how Mr. W. M. Ratcliff, Jr., went about this work he has himself explained in detail further on. To epitomize, he first made plans of all the five schools, incorporating in each the minimum of requirements. He then divided the total cubic contents into the appropriation and established a definite maximum cost per foot, which gave the pro rata cost of each school.

The resulting low figures made it clear that the city must be satisfied with frame buildings. Mr. Ratcliff then obtained the co-operation of four other architects. And there are so many good architects dwelling in Berkeley that we do not hesitate to say that a majority of the quintet selected are in every sense really first-class men—a rare event in any school programme.

It now remained for all five to vie with each other in getting up designs which would show the most for the outlay, and the result is the remarkable series of schools here illustrated.

As befitted the captain of this adventure, he chose the hardest task for himself and actually succeeded in getting the Thomas Edison school built with outer walls of solid brick, artificial stone edges and stiffening columns of reinforced concrete. This building at 10 cents per cubic foot easily leads for charm and cheapness combined. The writer has written many times of the absolute fitness of this mullioned Tudor style of building for schools. First it is honest and uniform in material and the possibilities of properly bonded brick work are not yet half realized. This does away with the tricked up front and the neglected ugly rear. The high grouped windows are exactly right for class rooms, and if any spot needs artistic emphasis it can be concentrated in an oriel, a doorway or a gable in a way impossible in formal classic. For telling simplicity, genuine quality of design without

tricks or make-believe, and for a nicely balanced all-round excellence without extravagance at any point, this school surely is a model of artistic economy difficult to duplicate. I need hardly remark that back of this apparently easy achievement was a long and zealous preparation and a mighty effort. In no other way can such a victory be won. And what an improvement is this school over the cold and formal, thin and diluted classic so often perpetrated by the professional school architect with his portfolio of plans, his columns, his cornices and his domes!

The John Muir school by Mr. James W. Plachek is a truly delightful building and a model of what a rural school for little children should really be. Many years ago, long before the days of Ittner of St. Louis, the author presented some school designs for Oakland on precisely these lines. The wiseacre of the board, Mr. McClymonds, objected to the designs on the ground that they were "too English." No doubt this passed for "sturdy Americanism." Of course it was nothing but sturdy nonsense. Such a man might as well object to Milton and Wordsworth in the curriculum on precisely the same grounds.

The Francis Willard and Garfield schools are frame buildings worked out in the style of the California Missions. The first is by Hobart and Cheney and the second by Coxhead & Coxhead. While both are well conceived and interestingly designed it is impossible to pass these by without noting a remarkable pictorial, almost poetical, quality instantly visible in the latter and a certain lack of this quality in the former. Many buildings have been put up in this style, especially in Southern California, but for some reason or other they very seldom exhibit the indefinable quality always found in the genuine examples. It is a largeness, seriousness, austerity and restraint coupled with a mellow decorum such as can best be paralleled in the monastic solemnity of the Gregorian chant or the plain song of Palestrina. It is not to be wondered that the dapper young gentlemen who slap out mission bungalows by the dozen can ever hope to acquire this spirit or to put it into their designs. It takes more than a "T" square and a few photographs in the hands of a smart draftsman to acquire the religious atmosphere in which this sort of work was conceived. Immense simplicity and breadth, coupled with a deep sense of harmony and cloistral repose can only be expressed by men possessing what Emerson calls "the abysmal temperament." Pictorially, at any rate, this Garfield school design expresses this feeling with more fidelity than in any other so-called mission design that I know of, and the quality that exudes from a photograph is the quality originally imbued into the design. These results are neither flukes nor accidents.

Of an entirely different character is the Luther Burbank school by Mr. Walter D. Reed. Here we have lots of symmetry and perfectly straightforward design. Mr. Ratcliff gives a very good description of this building on another page.

In conclusion we shall repeat what we began with, congratulations to the city of Berkeley that it showed the good sense or had the good luck to have chosen Mr. Ratcliff for its City Architect. There are few young men in the profession of better parts, deeper learning or wider travel, and we predict that he will not fail, in the words of the Psalmist, to go continually "from strength to strength."

The Recent Berkeley School Buildings

By WALTER H. RATCLIFF, JR., Supervising Architect.

John Muir School, Berkeley

THE five new schools started under the regime of Mayor Heywood have just been completed.

The buildings were designed and erected under the general supervision of the City Architect's office of Berkeley, assisted by Messrs. Hobart & Cheney, Coxhead & Coxhead, Walter D. Reed and James W. Plachek, each architect designing a school and receiving 4½ per cent for his services.

In December, 1914, W. H. Ratcliff, Jr., City Architect, presented a report on the approximate size of the various school buildings taken from data furnished by Mr. James, the Superintendent of Schools, and arrived at the conclusion that there was an allowance of cost of less than 11 cents per cubic foot for the buildings. An investigation of cost of school buildings in California and other parts of the country demonstrated that no permanent school buildings had been built for this price. The proposition of building on the unit plan was discussed, with the idea that one-half or two-thirds of the buildings be constructed at this time and the construction be of more permanent materials. This was turned down by the School Board on the ground that the children had to be housed now and that they could not wait for a future bond issue. The buildings were to be designed, however, for possible extension in the future.

The following extract of a report to the School Board is of interest:

The programmes for the various school buildings, written by W. H. Ratcliff, Jr., were adopted by the Board January 11, 1915. They were in brief as follows:

John Muir school to contain four class rooms, one kindergarten and auditorium seating 250 persons and necessary adjuncts. Cost, including architect's fees, not to exceed $28,000.

Garfield school to contain eight class rooms, manual training room, domestic arts and science rooms, auditorium seating 400 persons and necessary adjuncts. Cost, including architect's fees, not to exceed $45,000.

Luther Burbank school to contain six class rooms, commercial room, manual training room, domestic arts and science rooms, auditorium seating 500 persons and necessary adjuncts. Cost, including architect's fees, not to exceed $45,000.

Thomas Edison school to contain eleven class rooms, commercial rooms, drawing room, printing room, manual training room, domestic arts and science rooms, auditorium seating 500 persons and necessary adjuncts. Cost, including architect's fees, not to exceed $85,000.

Francis Willard school to contain eighteen class rooms, manual training room, auditorium seating 700 persons and necessary adjuncts. Two frame buildings in rear to be altered into domestic arts and science buildings and teachers' building. Cost, including architect's fees, not to exceed $90,000.

The programmes of work entrusted to the architects did not include furnishings, equipments, yard surface, planting or preparation of the site. The architect's contract with the city prescribed that he should design a building with the requirement of the programme

An Entrance Detail, John Muir School, Berkeley

for the amount of money designated in the programme, otherwise his plans might be thrown out by the Council. Anything that was given in excess of the programme of course was welcome.

No mention was made in the programme of the materials of which the buildings were to be constructed, as all the architects, except the city architect, believed it impossible to obtain anything except frame buildings.

The first schemes were submitted January 15, January 18 and January 19. In a number of cases the schemes would have been different had the city architect or Council alone decided the matter. The city architect acted as advisor.

Mr. Leland was chosen heating and ventilating engineer for all the schools.

The schools are examples of good buildings erected at the least possible cost.

The Edison school in South Berkeley is particularly remarkable in this respect: Its design is in the Old Colonial style, having solid brick and stone walls. The brick walls are solidly tied together with steel girders and reinforced concrete columns and the construction in general is permanent. The total cost of the building was $71,090, or about $7,000 less than the amount allowed by the Council. It covers an area probably four times as great as the Berkeley City Hall. The building was designed by the writer as City Architect. The contracts for this building were segregated and let separately at a considerable saving to the city. The idea of segregation of the work was a suggestion of the City Architect and it proved to be the means of saving the city some thousands of dollars.

The building is designed in what might be called the unit system, the first three units being built at this time, and will, when completed, undoubtedly be one of the finest school buildings in Berkeley.

The Francis Willard school on Telegraph avenue, designed by Messrs. Hobart and Cheney, is built in what might be called the California style, the class rooms opening directly upon spacious open corridors. Although the building is wood frame, ample provision has been taken against fire. Concrete stairways, fireproof roof and heavy cement plaster walls have been used. The furnace rooms—the danger spot in most schools—have been very carefully designed in all five schools. They are enclosed in reinforced concrete with metal windows and doors so that fire starting in these rooms can be easily controlled.

The Luther Burbank school, designed by Walter D. Reed, has also been built on the unit plan, the central unit being the only one completed at this time. The two smaller buildings on either side of the central unit are the manual training and domestic science buildings, respectively, and will, when the entire scheme is completed, be part of a continuous facade. In this school, as in the Edison school, more attention has been given to the manual arts and commercial side of education. The woodworking shops and cooking and sewing departments are models for a small school.

The Garfield school in North Berkeley, designed by Messrs. Coxhead and Coxhead, is built on the interior court plan, the arched corridors being

open to the air—an excellent scheme for a warm climate. The roof is of clay tile and the walls wood frame covered with cement plaster. The building is one story, but designed so that another story may be added later, which in all probability will have to be done very soon. Unfortunately the amount of money available for the schools was totally inadequate. The bond issue of $500,000 was stretched to pay for what was originally calculated to cost nearly $1,250,000, with the result that the size of the buildings was reduced to the absolute minimum and every economy—some, perhaps, short-sighted economies—exercised.

The John Muir school in Claremont, designed by James W. Plachek, is built in the English half-timber, a style of home-like simplicity. The usual forbidding appearance of most of our schools is here changed into a welcoming hospitality—a feeling that ought always to predominate in a lower grade school. When the scheme is completed the building will be in the form of a U, the present auditorium being in the center.

Great care was exercised in the proportioning of funds for the various schools, with the result that each architect was allowed an equal sum per cubic foot for construction cost of the building. This method created a competition between the various architects. A competition to see which architect could deliver the most for the money, in capacity, durability and looks.

All buildings are frame except Thomas A. Edison school, which is Class C with brick and stone exterior walls (with reinforced concrete columns and steel girders). The price of 9.49 cents per cubic foot sets a new price record for Class C schools.

Kindergorten Bay, John Muir School, Berkeley

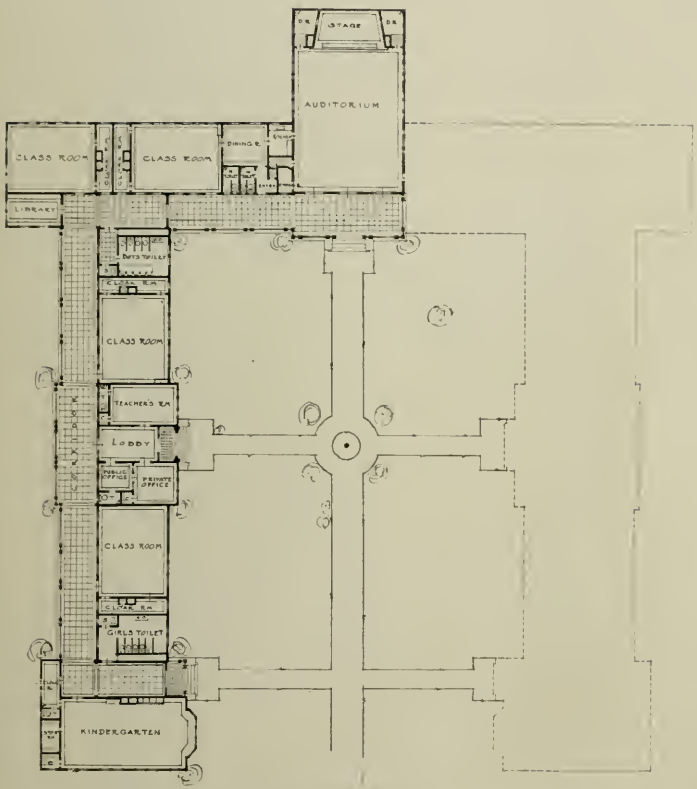
All the schools have reinforced concrete furnace rooms, dual heating and ventilating systems and the most modern plumbing. All class rooms have slate blackboards except Luther Burbank school. All class rooms are equipped with Hauser reversible windows, giving the means of converting these rooms into open-air class rooms. Each school contains a large auditorium.

Thomas Edison, Francis Willard and Garfield schools have fireproof roofs. Francis Willard school has interior fireproof stairways and Thomas Edison school has exterior metal fire escapes.

The table below gives not only the comparison per cubic foot, but comparison per square foot floor area and cost per room.

Name of School—	Construction Cost of Building	Total Floor Area Including Corridors
Edison, Thos. A.	$71,090	38,041
Willard, Francis	77,891	38,508
Burbank, Luther	43,757	22,626
Garfield	38,711	22,200
Muir, John	26,709	13,060

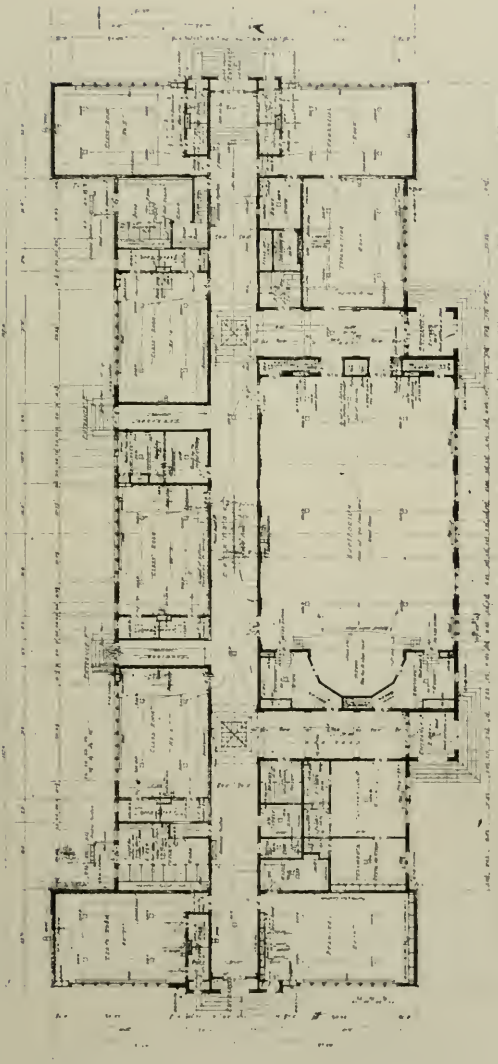
JOHN MUIR SCHOOL BUILDING, BERKELEY.
JAS. W. PLACHEK, ARCHITECT
W. H. RATCLIFF, JR., SUPERVISING ARCHITECT



FLOOR PLAN

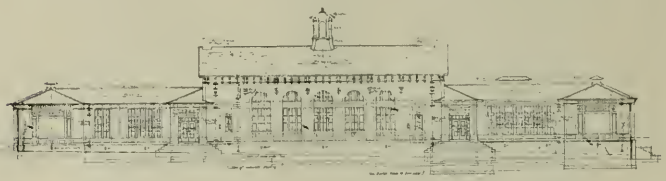
FLOOR PLAN, JOHN MUIR SCHOOL BUILDING, BERKELEY
JAS. W. PLACHEK, ARCHITECT
W. H. RATCLIFF, JR., SUPERVISING ARCHITECT

LUTHER BURBANK SCHOOL BUILDING, BERKELEY
WALTER D. REED, ARCHITECT
W. H. RATCLIFF, JR., SUPERVISING ARCHITECT



FLOOR PLAN, LUTHER BURBANK SCHOOL BUILDING, BERKELEY
WALTER D. REED, ARCHITECT
W. H. RATCLIFF, JR., SUPERINTENDING ARCHITECT

EXTERIOR, AUDITORIUM, LUTHER BURBANK SCHOOL BUILDING, BERKELEY
Walter D. Reed, Architect



ELEVATION, LUTHER BURBANK SCHOOL BUILDING, BERKELEY
Walter D. Reed, Architect

AUDITORIUM, LUTHER BURBANK SCHOOL BUILDING, BERKELEY
Walter D. Reed, Architect
W. H. Ratcliff, Jr., Supervising Architect

CORRIDOR, JOHN MUIR SCHOOL, BERKELEY
Jas. W. Plachek, Architect *W. H. Ratcliff, Jr., Supervising Architect*

Name of School—	Total Cubic Contents	Construction Cost per Sq. Ft. Floor Area	per Cubic Foot	No. of Rooms	Cost per Room
Edison	749,000	$1.87	9.49 cents	31	$2,293
Willard	733,550	2.02	10.62 cents	26	2,995
Burbank	528,000	1.93	8.29 cents	24	1,823
Garfield	466,200	1.74	8.33 cents	20	1,935
Muir	274,200	2.05	9.74 cents	11	2,428

The auditorium, manual training room, principal's office, etc., are considered as one room each. Kitchens, dressing rooms, toilets, locker rooms, cloak rooms, store rooms, wash rooms, main toilet rooms, boiler rooms, etc., are not counted as rooms.

In explanation of the heating systems, it should be stated that the buildings are equipped with practically two systems, combined, namely, a direct heating system, which provides steam radiators in each room, and an indirect heating system, which forces hot air into the room, heating and changing the air at the required rate to give perfect ventilation. Most schools are equipped with only the latter method of heating and ventilating, and in consequence there are many complaints because of the inability to give uniform heat in all the rooms.

* * *

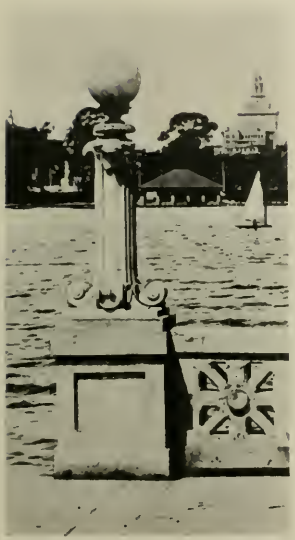
Three Large Structures Planned

In spite of the advance in structural steel prices, indications point to the early erection of at least three Class "A" buildings in San Francisco. A steel contract already has been let to Dyer Bros. for a twelve-story store and office building at Market and Second streets for John S. Drum. At Post and Powell streets a twenty-story building is projected from plans now being made by Ralph P. Morrell and A. J. Mazurette. Plans are being prepared by Charles Paff for an eight-story Class "A" apartment house to be erected on the property of the Lachman estate at Sutter and Mason streets at a cost of $600,000.

YOLO COUNTY COURT HOUSE, WOODLAND, CALIFORNIA
WILLIAM H. WEEKS,
ARCHITECT

Oakland's Parks and the Lake Merritt Improvements

By L. S. KERFOOT.*



THE city of Oakland has won world wide fame through the liberal expenditure of money for the beautification of its municipal parks, particularly the parks tributary to Lake Merritt. With the co-operation of landscape architects and engineers, some truly wonderful results have been accomplished. The lake has been transformed from an unsightly mud-hole to a thing of beauty. In the very heart of the city, it is recognized as one of the most beautiful spots on the Pacific Coast. The buildings which line the shores of Lake Merritt were designed by Walter D. Reed, architect of Oakland, with the exception of the Municipal Auditorium, which is the work of Messrs. Palmer & Hornbostel of New York City, with whom was associated John J. Donovan, former City Architect. The boat house, with white cement exterior and red tile roof, was built at a cost of $23,000, the canoe house cost the city of Oakland $12,000, and the boat landing $4,500. The Auditorium represents an expenditure of more than $1,000,000.

Only a few years ago the shores of the lake were unhealthful, ill-smelling salt marshes, littered with a few dilapidated boat houses and worse looking boats. To-day these marshes are transformed into green lawns, gravel walks and beds of brilliant flowers and shrubbery; the old barn-like boat houses have been replaced by a modern steel and brick boat house, an ornate concrete boat landing of beautiful, classical design and by smaller concrete landings; the unpainted fishing and hunting boats have given way to graceful, gaily-colored canoes, row boats, sail boats and motor boats.

The boat landing at the northeast end of the lake, called the "El Embarcadero," was so named because in the early days of California this was a principal shipping point. Ships connected at this point with the old San Antonio road and carried their cargoes to and from the ox teams and pack trains from the inland settlements. Most of the lumber from Redwood Peak and its surrounding canyons, where stumps of over twenty feet in diameter can still be seen, was shipped from this point for the building of San Francisco. Let your imagination go back to those days of lumber laden schooners and ox teams, and then contrast those scenes with the present ones. On any ordinary day you will see the lake alive with canoes, row boats, whale boats propelled by crews of boys and girls, racing shells and sailing boats; and you will hear shouts, laughter, singing and the monotonous calling of the coxswains of the racing shells. And at night there are the reflections from thousands of lights extending in long, wavering lines across the lake.

*Superintendent of Parks, Oakland, California.

And these changes have nearly all taken place in the last few years; and the improvements during the next few years to come will be even more marked. Already the need of an addition to the present boat house, and the construction of a new one on the north shore of the lake is apparent. A few years more will see a municipal bath house on the lake, with clean water pumped from the bay, and white, sandy beaches. Think what this will mean to Oakland! We'll have an Atlantic City within a few blocks of the City Hall, and one that will be popular every month in the year. And before many years there will be a wooded island in the lake; fountain spurting water a hundred feet or more into the air; a club house on Adams' Point, with verandas extending out over the water; a dancing pavilion, and music on the lake on pleasant evenings. And the trees planted along the lake shore will have grown up and added to the beauty of the whole. And these things will come to pass just as surely, and much more quickly, than have the changes from the salt marsh days. Truly we have in Lake Merritt opportunities almost unlimited, and they are opportunities that are not given to every city—opportunities that alone will make Oakland a distinctive city.

In order to do away with the ragged edge along the shore line, caused by the splashing of the salt water, about 10,000 running feet of rock wall was constructed along the northern and the eastern shores. Thousands of Leptospermums have been planted along this wall—shrubs which will grow to a height of from ten to fifteen feet, and whose branches will droop over into the lake and give a most pleasing effect. Along the shore at the Willows, a beach of white sand has been laid, which, aside from being beautiful, makes an ideal playground for the youngsters. Along the bluffs on Adams' Point, nearly two thousand shrubs of Furze and Broom have been planted, which, when matured, will give a golden bloom to the entire bluff.

Another attractive feature of the lake is the number of water fowl that seek its protection during the winter months. Thousands of ducks and gulls spend their winter here, and are a source of delight to bird lovers. At this time of the year hundreds of brilliant plumaged sprigtails may be seen any morning on the lawns of Lakeside Park, and they have grown so tame that an automobile can pass within a few yards without frightening them. And oftentimes, after a heavy rain the shore parks are white with thousands of gulls gathering the worms driven to the surface by the rains. When grading in Lakeside Park last winter several old canvasback ducks became so tame that they would waddle along after the plow gathering the worms The Park Department feeds these birds regularly.

The only trees in Lakeside Park at the time of its purchase, a few years ago, were the groves of oak and a few buckeyes. The oaks have been dying at an alarming rate, and in order to save them a crew of tree surgeons has been working on them steadily for the past year and a half. These surgeons treat a tree in just about the same manner that a dentist treats a tooth. When a decayed spot is found, the decay is carefully removed until a cavity surrounded by clean, healthy wood is obtained. The cavity is then thoroughly sprayed with a solution of carbolic acid and next filled with cement. Drain channels of cement are then placed to prevent rain water from gathering at the joining of the cement and the bark. As a finishing touch, the wound is given a heavy coating of asphaltum paint. These cavities often extend entirely through the tree, and sometimes are so large that it is necessary to hold the sides together with long iron bolts.

The following extract from an address by Mr. Chas. Elliot, one of the foremost landscape artists and thinkers of the last century, may well be repeated here as an argument for just such a splendid park scheme as Oakland has established:

CONCRETE BOAT HOUSE, LAKE MERRITT, OAKLAND
Walter D. Reed, Architect

BOAT LANDING, LAKE MERRITT, OAKLAND
Walter D. Reed, Architect

"It is evident that modern civilization is to have its home in large cities, in cities of vastly greater population than any the world has yet seen. If this be so, if the further progress of civilization is to depend mainly upon the influences by which men's minds and characters are affected, while living in great cities—with what zeal should we not endeavor to make these influences such as shall be elevating? If this be so, if the human race is destined to be more and more closely crowded into towns and suburbs—with what seriousness should we not endeavor to make these towns and suburbs as decent, as healthful, and as refreshingly beautiful? Our race has already learned by sad experience that this crowding into cities is attended by grave dangers. It is well known that the average length of human life is very much less in the town than in the country. Disease is more prevalent in the town than in the country. Cholera infantum, that fearful scourge which in August and September kills our young children by the thousands, is preeminently a town disease. And physical ills are not the only ills of town life. Our cities are hotbeds of vice and crime. The herding of the very poor in city slums breeds a degraded race. The lack of opportunity for innocent recreation drives hundreds to amuse themselves in ways that are not innocent, and if degradation is increasing in our towns, then it is plainly the duty and the interest of all who love their country to do what they can to check the drift."

		Acres
1.	Trestle Glen	125.00
2.	Lakeside Park	53.00
3.	Peralta Park	30.00
4.	San Antonio Park	12.00
5.	East Shore Park	11.00
6.	Mosswood Park	13.00
7.	De Fremery Park	12.40
8.	Linda Vista Park	8.50
9.	Lakeshore Willows Park	9.00
10.	Adams Park	4.10
11.	Edge Lake Park	8.66
12.	Clinton Square Park	2.40
13.	Harrison Square	1.82
14.	Jefferson Square	1.82
15.	Lafayette Square	1.82
16.	Lincoln Square	1.82
17.	Madison Square	1.82
18.	City Hall Plaza	1.00
19.	Bushrod Park	3.00
20.	Bay View Park	4.00
21.	Bella Vista Park	.75
22.	Union Plaza	.75
23.	Brooklyn Boulevard Plaza	.80
24.	Rockridge Park	1.00
25.	Colby Plaza	.70
26.	Santa Fe Plaza	.50
27.	Ridgeway Park	.40
28.	Aloha Park	.1
29.	Chetwood Plaza	.2
30.	Brooklyn Plaza	.6
31.	Mandana Boulevard Plaza	.6
32.	Third Avenue Plaza	4.
33.	Lake Merritt	160.00
		472.96

Most of the above are typical city squares and plazas—breathing places for office workers and children from the apartment houses and hotels, and lunch places for hundreds of shop girls and school children.

FOUNTAIN, WITH CONCRETE WALK AND SEATS, LAKE MERRITT, OAKLAND
Walter D. Reed, Architect

Mosswood Park, however, is entirely different from the ordinary small park, and has a charm and wildness that one would never expect within a few feet of a principal city street. Its wonderful trees, soft lawns and shady creek, with its vine-covered banks, make it one of the most loved spots in Oakland. San Antonio Park is interesting because of its early history, the story being that, in the years gone by, our early citizens held their public celebrations, bull fights and executions here, and had established an observation station at the highest point to report ships coming through the Golden Gate.

* * *

As is the case in most large cities, the park system of the city of Oakland is controlled by a Board of Park Directors, three in number, who are appointed by the Mayor and who serve, without compensation, for a period of six years, a new member being appointed every two years. The framers of the charter evidently fully realized the great responsibilities of this board in selecting and acquiring suitable park lands for the city and in the beautification of the same; and by making the position a purely honorary one and by having the terms interlap, thereby showed their desire to keep this board free from political influences. The character and ability of the members who have so far served the city in this capacity show the wisdom of such a policy. The funds for the purchase, improvement and maintenance of parks

are supplied by the City Council from the general tax levy, it being the duty of the Park Directors at the end of each fiscal year to supply the Council with an itemized statement of estimated expenses for parks for the ensuing year.

Oakland owns thirty-three parks and plazas, covering 190 acres, of which about 150 acres are highly developed. While our park area is small for the size of the city, yet this fact has some compensation in the fact that the municipality has been enabled to develop this comparatively small area to a much higher standard than exists in most city parks. No finer lawns exist in any public parks in this country, and the members of the American Association of Park Superintendents, who visited Oakland last year, were unanimous in their praise of the beauties of our parks. Bear in mind that these people were visiting parks throughout the United States for the purpose of gaining knowledge and of criticising wherever they considered criticism due, and that, therefore, their praise meant more than mere words—it was earnest praise; not politeness. A vivid imagination is required to picture the scenic and recreational possibilities of the lake and the surrounding parks. Familiar as we now are with the beauties of our lake parks, it is hard to realize that only a few years ago the shores surrounding the lake were salt marshes. Only a year ago, until the rock wall about the lake was constructed, we had a ragged line of ill-smelling mud between the lawns and the water line, whereas now our parks extend to the water line and present a finished appearance. A little over a year ago the dilapidated boat house at the Twelfth street dam was the only recreational feature of the lake; now there are two handsome municipal boat houses (built by the Park Department) housing a couple of hundred fine canoes and row boats, besides numerous launches and sail boats; and already there is a demand that a third boat house be built on the east shore of the lake. And where we hunted the wild ducks a few years ago we now see them in thousands on our lawns and in the lake, protected and almost as tame as chickens. Our power lawn mowers, making as much noise as a motorcycle, now pass within a few yards of them without causing them to fly; and when they were not fed one day last week they plainly showed their surprise and disappointment by indignant quackings throughout the day. The construction of a short beach of white Carmel sand has become so popular with the children as to demonstrate unquestionably that the next few years will see most of the protected portions of the shore line made into such beaches. But of all the possibilities of the lake a municipal bathing plant is by far the greatest. Such a recreational feature would give pleasure and healthful exercise to more people than would all the other recreational features of the city; and the cost of maintenance of such a plant could be covered by a few cents charge for each bathing suit and towel. The Park Directors are now considering means for sterilizing the water sufficiently for bathing purposes, and the next few years will probably see such a municipal bathing plant in operation. The above are only a few of the improvements in our lake park that we shall see come to pass that will make Oakland unique and blessed in this one part of its park system.

During the past year over 100,000 cubic yards of fill and loam were placed on the Auditorium grounds, the greater part of the fill having been pumped in by the municipal dredger; and about 10,000 yards more loam are needed before the planting can be done. When the landscape work is completed, this beautiful building, surrounded by lawns and trees, with its lake vista, will be a most striking and wonderful monument to our city.

FIRST CHOICE SAN FRANCISCO PUBLIC LIBRARY COMPETITION. Geo. W. Kelham, Architect.

Mathews Sues San Francisco Library Trustees

EDGAR A. MATHEWS, one of the several architects who submitted plans in the competition for San Francisco's new million-dollar public library, has finally brought suit in the Superior Court to recover $11,900 from the Board of Library Trustees for alleged breach of contract.

Mathews' complaint is virtually a reiteration of the charges he made before the Board in May of 1914, when he declared that George W. Kelham's excellent prize-winning design was an all too faithful copy of the Detroit Public Library, and that the Trustees were breaking faith with the other competitors when they awarded Mr. Kelham the commission.

In asking for a balm of $11,900 Mathews does not ask for damages, but only for what he claims he is entitled to for services rendered and expenses incurred. He says he expended $1,190 for extra office help, additional rent and incidentals connected with the preparation of the plans he submitted. In addition he says he put in three months of painstaking professional labor which he estimates to be worth $10,000.

Although the board of library trustees is the formal defendant in the suit, and is expected by Mathews to furnish the golden recompense if he is successful, the real targets for his pointed shafts are Kelham and two of the judges in the competition, Cass Gilbert, the famous New York architect who won the prize for the Detroit Public Library, and Paul Cret, professor of architecture of the University of Pennsylvania, who served as one of the judges in the Detroit competition which Gilbert won.

Mathews says that before the local competition started Kelham had full knowledge of the fact that Gilbert had won the Detroit competition with a "peculiar and unusual" design, and that Cret had been one of the judges of that competition. Acting on this knowledge, Mathews says, Kelham submitted a design in which the front and side elevations were almost identical with the design by which Gilbert won the first prize at Detroit. In fact, the complaint charges, Kelham employed to assist him a draftsman who had assisted Gilbert in evolving the Detroit design.

By thus following the lines of Gilbert's masterpiece, Mathews says, Kelham played upon the vanity and self-esteem of the New York architect who was judging the local competition, and also played upon the same human frailties in Paul Cret, who had voted for Gilbert's design in the Detroit competition. All of which contentions by Mathews are considered ridiculous by most members of the profession.

Relations Between the Architect and the Engineer

THE FOLLOWING QUESTIONS ARE DISCUSSED BY:

T. L. CONDRON[1]
DAVID W. MORROW[2]
BURT D. FENNER[3]
A. MORGAN SMITH[4]
ROBERT D. SNODGRASS[5]
in "Concrete."

1. Are the engineers' plans to be supplementary to the architects', and to be so designed that they conform to the general design as given by the architect, in regard particularly as to measurements of floor heights, sizes of window and door openings, cornice details, framing, etc., or do the engineers' reinforcing plans supersede and control the architects' designs, the design to be changed in order to work to the reinforcing plans?

2. If the reinforcing engineer in working out his plans finds that he can make a more convenient, more economical or better design in any way, should he not confer with the architect before changing his design in any material way?

3. Is an architect, in approving designs for reinforcing submitted by a reinforcing engineer, supposed to check over and be responsible for measurements, size of steel, shape, location and placing of steel and for the plans being so that the working out of his design can be made, or is the reinforcing engineer solely responsible for the correct design of his work so that the architect's plans can be carried out?

By MR. CONDRON.

WE do not like the term "reinforced concrete engineer" any more than we would favor the term "wooden" engineer. Where an engineer and architect are employed, their work should be harmonious in every particular and usually the engineer and architect are associated or the engineer acts as consulting engineer to the architect.

It frequently happens that certain "commercial engineers," in order to sell material or for other reasons, endeavor to "improve" upon the architect's plans by materially changing them or by substituting an entirely different form of construction than was originally called for. This is sometimes done in accordance with the architect's wishes, but more frequently it is done regardless of his wishes. It is unfortunately true that many plans for buildings are sent out that have not been well designed structurally and an experienced structural engineer can improve upon the design and cheapen the construction to the advantage of the owner. But in our opinion such substitutions or changes should only be made to the professional adviser of the owner. If the owner has not selected a competent adviser, that is his misfortune.

Where an architect is employed and reserves to himself the right of approving general and detailed structural plans, particularly where he requires the contractor to furnish the general structural plans, subject to his approval, the architect must assume the responsibility to pass upon the design as to strength and adaptability. Our experience is that very few architects are willing to assume any responsibility in approving plans submitted by contractors, but certainly the technical adviser of the owner must take this responsibility. The architect's responsibility should not extend to detailed dimensions except where they affect other features of the work or where they involve the actual strength of the structure. The contractor should be required to make his work fit together and fit with other work on the building.

[1]The Condron Co., Chicago.
[2]Consult. Engr., Cleveland.
[3]Secy., Am. Inst. of Architects, Washington, D. C.
[4]Architect, Mt. Lebanon, Pa.
[5]Chf. Engr., Trussed Concrete Steel Co., Youngstown, Ohio.

It not infrequently happens that the specifications provide that the contractor shall submit structural plans showing a design capable of carrying the definite loads with definite unit stresses and all subject to the architect's approval, when the architect is not competent to pass upon the plans submitted and fails to employ anyone who is competent. Numerous instances have come to the attention of such a situation, and to make matters worse the contractor at times has shown no more knowledge of structural designing than has the architect, with a result that the structure has been built in a most unsatisfactory and almost criminal manner. No one would pretend that this represents first-class practice, but, unfortunately, it is not rare.

So long as some architects leave structural designing to be done by those whose only object is to reduce the cost below that of any other designer, there will be a serious question as to the kind of professional services rendered by "reinforced concrete" or other "material" engineers.

By MR. MORROW.

1. The engineer's plans should supplement the architect's and, if possible, the general design of the building should not be changed. If for any reason it is desirable or advantageous to vary from the architect's plans, the matter should be taken up with him.

2. The engineer should confer with the architect when he finds that he can materially better the design without defeating that which the architect has been striving to accomplish.

3. The engineer should be responsible for his design and if looking after the supervision, should see that all steel is properly placed. The architect's and the engineer's plans should agree.

By MR. FENNER

I shall be glad to give you my personal opinion in answer to the three questions which you ask. You will appreciate that my answers must be considered as personal, for there has been no opportunity to submit the questions to the Board of Directors of the Institute.

1. If an architect makes the design for the building, it is unquestionably the duty of the engineer to fit his work to that of the architect.

2. It very frequently happens that the engineer in designing his structural members will find ways in which slight changes in the architect's design would result in more convenient or more economical construction. In such cases it is undoubtedly his duty to call the matter to the architect's attention, and to work in co-operation with him.

3. The architect checks the engineer's drawings in order to see whether or not they correctly interpret and carry out his design. The architect does not assume responsibility for every measurement, size of steel, etc., for this is precisely the service for which the engineer is employed.

By MR. SMITH.

1. Assuming that a large building is to be erected in which the major portion is of reinforced concrete, the architect knows no more about concrete design than does the concrete engineer about architectural proportions. The architect gives the engineer a general architectural arrangement, also floor heights, window openings, floor loads, etc., to work on. From this on the architect may be obliged to change his architectural scheme to suit the designs of the engineer.

2. If the architect, through unfamiliarity with concrete architecture, should outline a building far from a practical concrete arrangement, it would seem altogether proper for the engineer when he saw that a proper and economical concrete design was disarranging the architect's plans, to warn the architect what was likely to happen his plans.

3. If the architect is competent to check over concrete sections, sizes and spacing of steel, he may place himself responsible for the proper working out of the engineer's designs and relieve the engineer of any further obligations.

There is no doubt but that the engineer should be responsible for the correct design of his work so that the architect's designs can be carried out, provided that the architect's detail plans have been available.

By MR. SNODGRASS.

We fail to understand why your correspondent differentiates between the reinforced concrete engineer and any other engineer that the architect may find it necessary to use on his design for a structure. We believe, therefore, that an answer to this question should be general and refer to the whole engineering design, rather than simply to the reinforced concrete that may be used in a structure.

1. As a rule, the architect on the building is employed by an owner to lay out a structure which will not only please him architecturally, but is of the proper dimensions for story heights, window openings, door openings, etc. If the architect is not an engineer himself, he must necessarily employ a structural engineer to look after the structural features of the building for him. It, therefore, remains for both the architect and the structural engineer to work in unison, in order to determine the column spacing, the story heights, and all other features of the structure which the owner may desire. It is the engineer's part to provide as cheap a structure as possible which will meet the architectural requirements.

2. There should be an effort on the part of both the architect and engineer to make the structure as economical as possible, at the same time giving due consideration to the owner's desire for architectural effects and arrangement. The architect and the engineer should co-operate to secure the cheapest structure possible that will meet the required specifications.

3. The architect and the engineer employed on a building should each be responsible for his own part of the structure. It would be entirely foolish to request of an architect that he check and approve the strength of a structure when it is the engineer's business to do this. However, the architect should certainly check and approve the engineer's drawings insofar as they concern the architectural features of the building, such as location of openings, size of members to meet the architectural effects, headroom and all other features of the engineer's design which may be strictly regarded as part of the architectural requirements.

It would appear from your questions that you have in mind more the application of a design prepared by a manufacturer of reinforcing materials than the relation between an architect and a consulting engineer, both working on the same proposition. If the former is the case and if the architect relies upon a manufacturer to supply him with a design, he should undoubtedly check this design to determine whether or not it meets his architectural requirements and at the same time he should appoint an engineer to approve the plans structurally. The average manufacturer of structural materials is honest and attempts to give the architect all that is asked for in his specifications; nevertheless, there may be a few isolated cases where the manufacturer is more anxious regarding his own profits than the proper design of the structure, and in order to secure absolute protection against such a condition and also in order to protect himself, the architect should employ an engineer. It must be remembered that when an owner employs an architect to execute a building for him, he expects to receive engineering as well as architectural service.

Once Again—Who Built the First Skyscraper?

THE New York Sun has awarded the honor to one D. H. King, Jr. Thomas S. Chard of Atlantic City, taking issue with the Sun, credits, and we think correctly, Major W. L. B. Jenney with the distinction. Mr. Chard's letter to the Sun is as follows:

In the Sun of April 21 you pay tribute to the memory of D. H. King, Jr., whom you call "the pioneer in skyscraper construction." I have never seen stated in print the origin of the so-called skyscraper, and it may interest your readers to know about it.

In the year 1888, wishing to construct a residence in Chicago, I employed as architect Major W. L. B. Jenney. I had known him for some years. He was an able and very modest man, and it was he who designed and built the first building embodying the principles of the modern skyscraper. He told me the story, and here it is:

He said that he had long had the idea that it would be possible to build such buildings, and he had toiled hard to draw some feasible plan. But then, he said, "I thought such construction would not be practicable, for the expansion and contraction by reason of heat and cold in our climate would shake the windows into the street. But still I could not abandon the idea. One night, after I had spent the evening in studying the subject, the whole plan came to me in a dream.

"I awoke, made notations on paper and the next day studied the matter carefully in my office, and was satisfied that I had solved the problem."

He then conferred with his friend and former associate in the army, General A. C. Ducat, who had once been a civil engineer, but was then one of the Western managers in Chicago of the Home Insurance Company of New York. General Ducat informed Major Jenney that the company was about to construct a building in Chicago for its Western department. The directors of the Home Insurance Company, he said, were soon to visit Chicago to consider the matter on the ground, and he promised to introduce Major Jenney to them when they arrived. General Ducat then took the Jenney plans and gave them careful study.

Major Jenney met the directors as arranged and submitted his plans. Charles J. Martin was then president of the Home Company and demurred to the investment of hundreds of thousands of dollars in a "mere experiment," but General Ducat was warm in his advocacy and the plans were adopted. The Home Insurance building was the first ever constructed on the lines followed by the skyscrapers of the present day. The Home building was not of great height, but it demonstrated the practicability of the plans, and its construction was quickly followed by that of the Tacoma and other buildings of great height.

To Major W. L. B. Jenney is due the honor of originating the plans which have revolutionized the architecture of our modern cities.

I hope that some day Chicago will erect a suitable monument to the memory of Major Jenney and that elsewhere due honor may be done to his name.

* * *

The New York Post does not dispute Chicago's title to the honor of giving us the first skyscraper. Credit for its design, however, is given to Messrs. Holabird & Roche, the building being erected in the "loop district" as early as 1886. The first example of lofty building in New York City, says the Post, was the structure at 50 Broadway, designed by Bradford Lee Gilbert in 1888. A few years later both these wonders became insignificant and practically forgotten because they were so greatly outdone by succeeding skyscrapers. But these were not the initial efforts, for a skyscraper was designed nearly three centuries ago, many generations before the discovery of the steel cage system of this day.

Jacques Perret, an architect of Chambery, Savoy, is the accredited author of plans for an eleven-story building, 361 feet in height, which must have had twice the space between floors, for to-day eleven stories are crowded within a height of 150 feet. Perret's building was planned to be 166 feet long and 140 feet wide, with supporting walls 12 feet thick at the base.

While never executed, the project of Perret in many ways was a remarkable prophetic vision. Evidently it was intended for dwelling purposes, for in describing the project he wrote, "This great and excellent edifice can accommodate comfortably 500 people."

ENTRANCE DETAIL AND PATIO TO SOUTHERN CALIFORNIA MISSION HOME
IRVING J. GILL, ARCHITECT

The Home of the Future—The New Architecture of the West

By IRVING J. GILL, Architect.*

"An artist is known rather by what he omits."

ARCHITECTURE, Victor Hugo says, is the great book of the world, the principal expression of man in his different stages of development, the chief register of humanity. Every religious symbol, every human thought has its page and its monument in that immense book. Down to the time of Gutenberg, he points out, architecture was the principal, the universal writing. Whoever was born a poet then, became an architect. All arts obeyed and placed themselves under the discipline of architecture. They were the workmen of the great work. There was nothing which, in order to make something of itself, was not forced to frame itself in the shape of an architectural hymn or prose. He has shown us that the great products of architecture are less the works of individuals than of society, rather the offspring of a nation's effort than the inspired flash of a man of genius, the deposit left by a whole people, the heaps accumulated by centuries, the residue of successive evaporations of human society, in a word, a species of formation. Each wave of time contributes its alluvium, each race deposits its layer on the monument, each individual brings his stone.

No architect can read this inspired analysis of the place and the importance of architecture in preserving the records of the world's thought and action, without approaching his own part in this human record with a greater reverence and greater sense of responsibility. What rough or quarried stone will each of us contribute to the universal edifice, what idle or significant sentence will we write with brick and stone, wood, steel and concrete upon the sensitive page of the earth? In California we have great wide plains, arched by blue skies that are fresh chapters as yet unwritten. We have noble mountains, lovely little hills and canyons waiting to hold the record of this generation's history, ideals, imagination, sense of romance and honesty. What monument will we who build, erect to the honor or shame of our age?

The West has an opportunity unparalleled in the history of the world, for it is the newest white page turned for registration. The present builders have the advantage of all the wisdom and experience of the ages to aid them in poetically inscribing today's milestone in the progress of humanity. The West unfortunately has been and is building too hastily, carelessly and thoughtlessly. Houses are springing up faster than mushrooms, for mushrooms silently prepare for a year and more before they finally raise their house above the ground in proof of what they have been designing so long and secretly. People pour out here as on the crest of a flood and remain where chance deposits them when the rush of waters subsides, building temporary shacks wherein they live for a brief period while looking about for more permanent anchorage. The surface of the ground is barely scraped away, in some cases but a few inches deep, just enough to allow builders to find a level, and a house is tossed together with little thought of beauty, and no thought of permanence, haste being the chief characteristic. The family of health or fortune seekers who come out here generally expects to camp out in these shacks for but a short time and plans to sell the shift-

*San Diego. Extract of an article in The Craftsman, the fourth in a series on "The Home of the Future." Illustrations selected by the editor, and the author for this magazine.

A "Mushroom" California Bungalow, Too Many of Which Are Spoiling the Appearance of Our Western Cities

Low and Comfortable Appearing, But Not in Keeping with Mr. Gill's Views of Western Architecture

The Irving J. Gill Type of Building, Which the Designer Says Has the True Western Feeling

less affair to some other impatient newcomer. Perhaps such temporary proceedings are necessary in the settling of a new land; fortunately such structures cannot endure, will never last long enough to be a monument for future generations to wonder at. Such structures cannot rightly be called homes, so do not justly deserve notice in a consideration of Western domestic architecture.

If we, the architects of the West, wish to do great and lasting work we must dare to be simple, must have the courage to fling aside every device that distracts the eye from structural beauty, must break through convention and get down to fundamental truths. Through force of custom and education we, in whose hands much of the beauty of country and city is entrusted, have been compelled to study the style of other men, with the result that most of our modern work is an open imitation or veiled plagiarism of another's idea. To break away from this degradation we must boldly throw aside every accepted structural belief and standard of beauty and get back to the source of all architectural strength—the straight line, the arch, the cube and the circle—and drink from these fountains of Art that gave life to the great men of old.

Every artist must sooner or later reckon directly, personally with these four principles—the mightiest of lines. The straight line borrowed from the horizon is a symbol of greatness, grandeur and nobility; the arch patterned from the dome of the sky represents exultation, reverence, aspiration; the circle is the sign of completeness, motion and progression, as may be seen when a stone touches water; the square is the symbol of power, justice, honesty and firmness. These are the bases, the units of architectural language, and without them there can be no direct or inspired architectural speech. We must not weaken our message of beauty and strength by the stutter and mumble of useless ornaments. If we have nothing worth while to say with our building then we should keep quiet. Why should we chatter idly and meaninglessly with foolish ornaments and useless lines?

Any deviation from simplicity results in a loss of dignity. Ornaments tend to cheapen rather than enrich, they acknowledge inefficiency and weakness. A house cluttered up by complex ornament means that the designer was aware that his work lacked purity of line and perfection of proportion, so he endeavored to cover its imperfection by adding on detail, hoping thus to distract the attention of the observer from the fundamental weakness of his design. If we omit everything useless from the structural point of view we will come to see the great beauty of straight lines, to see the charm that lies in perspective, the force in light and shade, the power in balanced masses, the fascination of color that plays upon a smooth wall left free to report the passing of a cloud or nearness of a flower, the furious rush of storms and the burning stillness of summer suns. We would also see the glaring defects of our own work if left in this bold, unornamented fashion, and therefore could swiftly correct it.

I believe if we continually think more of line, proportion, light and shade, we will reach greater skill in handling them, and a greater appreciation and understanding of their power and beauty. We should build our house simple, plain and substantial as a boulder, then leave the ornamentation of it to Nature, who will tone it with lichens, chisel it with storms, make it gracious and friendly with vines and flower shadows as she does the stone in the meadow. I believe also that houses should be built more substantially and should be made absolutely sanitary. If the cost of unimportant ornamentation were put into construction, then we would have a more lasting and a more dignified architecture.

THE REAL MISSION FEELING IS TO BE FOUND IN MR. GILL'S HOUSE DESIGNS

In California we have long been experimenting with the idea of producing a perfectly sanitary, labor-saving house, one where the maximum of comfort may be had with the minimum of drudgery. In the recent houses that I have built the walls are finished flush with the casings and the line where the wall joins the flooring is slightly rounded, so that it forms one continuous piece, with no place for dust to enter or to lodge, or crack for vermin of any kind to exist. There is no molding for pictures, plates or chairs, no baseboards, paneling or wainscoting to catch and hold the dust. The doors are single slabs of hand-polished mahogany swung on invisible hinges or else made so that they slide in the wall. In some of the houses all the windows and door frames are of steel. They never wear out, warp or burn, a point of importance in fireproof construction. The drain boards are sunk in magnesite, which is made in one piece, with the walls and all cornices rounded, so not a particle of grease or dirt can lodge, or dampness collect and become unwholesome. The bath tubs are boxed and covered with magnesite up to the porcelain.

By this manner of building there is no chance anywhere in the house for dust to accumulate. This minimizes the labor of keeping the house clean and gives the rooms a sweet, pure, simple and dignified appearance. The money usually wasted in meaningless gables, swags, machine-made garlands, fretwork and "gingerbread" goes into labor-saving devices or into better grade of material. As much thought goes into the placing of the ice-box that can be filled from the outside without tracking through a clean kitchen, or the letter box that can be opened from within the house, or the proper disposal of the garbage can, or the convenient arrangement of kitchens so that meals may be prepared with the greatest economy of labor, as is often expended in the planning of the pergola or drawing rooms.

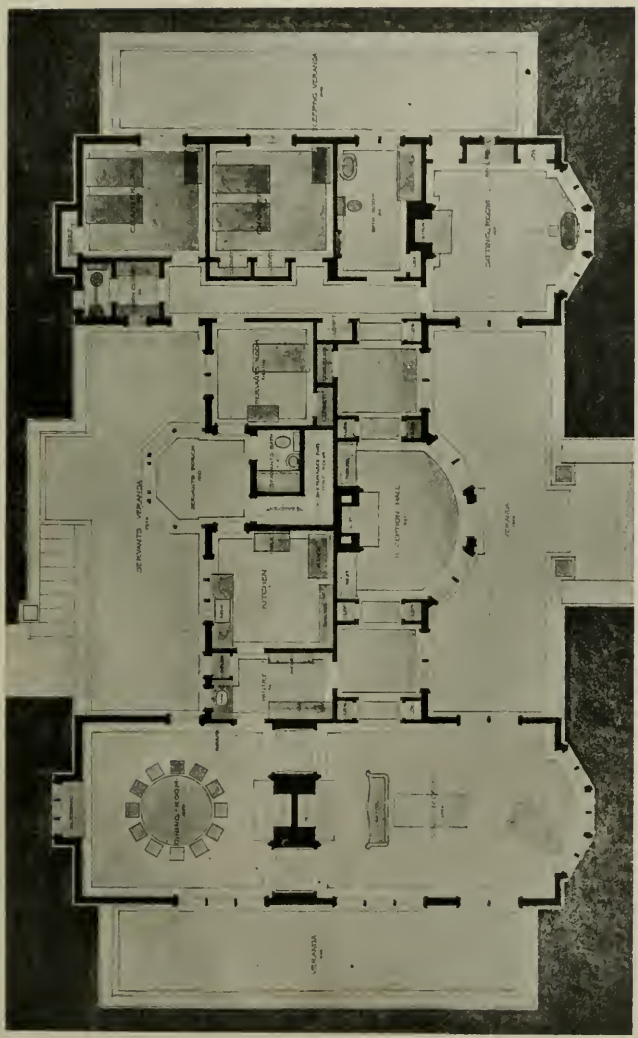
There is something very restful and satisfying to my mind in the simple cube house with creamy walls, sheer and plain, rising boldly into the sky, unrelieved by cornices or overhang of roof, unornamented save for the vines that soften a line or creepers that wreathe a pillar or flowers that inlay color more sentiently than any tile could do. I like the bare honesty of these houses, the child-like frankness and chaste simplicity of them. It seemed too peculiar an innovation at first to make a house without a large overhang roof, for we have been so accustomed in California to think them a necessity, but now that the first shock is over people welcome the simplicity of the houses built without these heavy overhangs and see that they really have distinction.

In the West, home building has followed, in the main, two distinct lines—the Spanish Mission and the India bungalow. True, we find many small Swiss chalets clinging perilously to canyon walls, imposing Italian villas facing the sea and myriad nameless creations whose chief distinction lies in the obvious fact that they are original, different from any known type of architecture. It were much better for California if there were less complicated, meaningless originality and more frank following of established good types.

Because of the intense blue of sky and sea that continues for such long, unbroken periods, the amethyst distant mountains that form an almost universal background for houses or cities, the golden brown of summer fields, the varied green of pepper, eucalyptus and poplar trees that cut across it in such decorative forms and the profusion of gay flowers that grow so quickly and easily, houses of a bright romantic picturesqueness are perfectly suitable that would seem too dramatic in other parts of the country. They seem a pleasing part of the orange-belted flower fields and

HOME OF REDWOOD AT THE RECENT EXPOSITION, NOW BEING DUPLICATED IN LOS GATOS FOOTHILLS
LOUIS C. MULLGARDT, ARCHITECT

Mr. Gill is an enthusiastic advocate of redwood for certain building construction



FLOOR PLAN, A REDWOOD HOUSE
LOUIS C. MULLGARDT, ARCHITECT

DINING ROOM, A REDWOOD HOUSE
LOUIS C. MULLGARDT, ARCHITECT
Redwood Panels finished California Brown

belong to the semi-tropical land. These same houses would certainly look artificial and amusingly uncomfortable and out of place in the East; but they essentially belong to the land of sunshine.

The contour, coloring and history of a country naturally influence its architecture. The old wooden Colonial houses of the East, shaded by noble elms, with their attendant lanes and roads outlined by stone walls, perfect pictures of home beauty; the stone houses of Pennsylvania, beautiful of color, stately, eloquent of substantial affluence and generous hospitality; and the adobe houses of the Arizona Indians formed of the earth into structures so like the surrounding ledges and buttes in shape that they can scarcely be told from them, and which are triumphs of protective, harmonious building, are familiar types of buildings characteristic of their locality.

California is influenced, and rightly so, by the Spanish Missions as well as by the rich coloring and the form of the low hills and wide valleys. The Missions are a part of its history that should be preserved and in their long, low lines, graceful arcades, tile roofs, bell towers, arched doorways and walled gardens we find a most expressive medium of retaining tradition, history and romance. In coloring and general form they are exactly suited to the romantic requirements of the country. It is safe to say that more architectural crimes have been committed in their name than in any other unless it be the Grecian temples. The façade of the San Diego Mission is a wonderful thing, something that deserves to be a revered model, something to which local building might safely and advantageously have been keyed. Instead of this it has been abused and caricatured in the most shocking way. Its charming proportions and graceful outline have been distorted to adorn tall public buildings, low railway stations, ornate hotels, cramped stables and minute private houses in the most irreverent, inexcusable and pitiable way. The arched cloisters of the Missions have been seized upon and tortured until all semblance of their original beauty has been lost. Their meaning and definite purpose—that of supporting the roof or the second story and thus forming a retreat or quiet walk for the monks—has been almost forgotten.

The arch is one of our most imposing, most picturesque and graceful architectural features. Its power of creating beauty is unquestionable, but like any other great force, wrongly used, is equally destructive. Fire warms and cheers us and cooks our food, but if not carefully handled destroys everything it touches. The Missions have taught us also the beauty and usefulness of the court. Ramona's house, a landmark as familiar in the South as some of the Missions, was built around three sides of an open space, the other side being a high garden wall. This home plan gave privacy, protection and beauty. The court contains a pool and well in the center and an arbor for grapes along the garden wall; the archway that runs along the three sides formed by the house made the open-air living rooms. Here were arranged couches for sleeping, hammocks for the siesta, easy chairs and tables for dining. There was always a sheltered and a sunny side, always seclusion and an outlook into the garden. In California we have liberally borrowed this home plan, for it is hard to devise a better, cozier, more convenient or practical scheme for a home. In the seclusion of the outdoor living rooms and in their nearness to the garden, the arrangement is ideal.

Another thing that has influenced California architecture is the redwood that is so abundant and so different from anything in the East. In color it is a low-toned red that looks as though it were lighted by sun rays. It blends harmoniously with the clear atmosphere of the country, it is inex-

pensive, easily handled and outlasts almost any known wood, for it does not rot when standing in the ground nor when subject to continued dampness. Split into long, narrow shingles called shakes, or into long clapboards, it makes strikingly beautiful houses. Furniture of simple lines is also made of it, and though it is frequently oiled or varnished or bitten by acids to a soft gray tone it is more often left in its own lusterless beauty. Redwood houses look as natural a part of the forest and canyon as a tawny mushroom or gray stone. Delightful little home-made cottages of redwood are to be found all through California. They cost their owners but a few hundred dollars. These camps or week-end houses are the very apple of the people's eye. Everybody has one and lives therein happier than any king, enjoying a simple, free, healthy life, breathing eucalyptus and pine-scented air, resting full length in flower-starred grass, bathing in the fern-bordered streams. As contrast to these myriads of comfortable, lovable little camp homes that can be built for three or four hundred dollars and that look as picturesque and fascinating as any bird's nest, are beautiful palaces of concrete for people possessed of many acres, built with every modern convenience and every device for creating beauty, with fountains, swimming pools, sun parlors, outdoor dancing courts and lawn, pergolas, tea houses, art galleries and a thousand other wonderful things that contribute to elaborate and luxurious living.

* * *

Architectural Simplicity

TO be straightforward in architectural expression is the most difficult thing on earth; it implies a force of character trained to grasp a multitude of diverse conditions; it demands a knowledge of men, of life, as well as of the crafts and the kindred arts; it calls for untiring activity, ceaseless comparison, and a flood of energy if the architect is ambitious to translate abstract qualities into fluent and distinguishable terms. Architecture, when it soars above the ordinary level, is akin to the finest literature; its purpose is analogous. Having once enjoyed purity of style, brilliancy of conception, and that easy scholarship which is never absent from inspired work, we entertain little affection for the products of mediocrity, no matter how attractive the latter may appear at first sight.

But the very nature of the term "simplicity" is one needing careful inquiry, for it holds a subtle meaning, and, although the expression is used glibly every day, few pause to consider or analyze the elusive qualities the word connotes. We have a valid excuse to-day to direct attention to what should be understood by every architect, namely, the need for logical expression in the problems of design entrusted to his care and scholarship. For the age is curious in its uncertain tendencies, and what we are apt to decry as careless inefficiency on the part of the individual, viewed in a larger sense, is more often the product of a decadent and apathetic epoch.

Simplicity in architecture is difficult to attain for many reasons, among which the demand for novelty is the chief deterrent. In addition, the lack of co-operation among artists, inability to fix a definite standard of taste, the love of complexity and vulgar display ruled by commercial instinct almost invariably act against real achievement, and, in consequence, a dead level vernacular passes muster as the real thing in the public estimation of what constitutes recent architecture.

We are moved to condemn, in the strongest terms, those specimens of building enterprise which disfigure the chief centers of the metropolis; we

indulge in melancholy retrospects of what past ages accomplished in architecture; we rage hysterically and utter invectives against those responsible for the perpetration of such monuments of incompetence; yet we fail to realize how the evil can be checked or the public enlightened on this issue of vital importance to art.

Architects are inclined to misinterpret the works of the past, holding such types to be models of excellence and worthy of emulation, but overlooking the fact that whole periods of history went to the shaping of their attributes; and that the real meaning, elusive to many, inherent in these masterpieces is that the architect, perhaps subconsciously, imparted the very essence of his age to the shaping of the parts and the massing of the whole.

It will be asked with pertinence, "How is it possible to impart that desirable rich expression to a plain building if we are to forego the usual features that make up our stock in trade?" The answer is pithy and to the point: "By the exercise of common sense in the proportion of parts; by a sound study of what elementary composition implies; by reticence in the selection of ornament and elimination of crude and ugly features which are characteristic of the prevalent fashion."

In England especially architects are too obsessed with the importance of the problems they are engaged upon. There is too much paper architecture, and little, if any, aptitude is shown to design a building to look well in execution, and at the same time meet any demands made upon it from a purely artistic and critical standpoint.

In the majority of offices, from the time the small-scale drawings are finished and the full-size details compiled, the designer has no thought of the finished aspect of his work; more often than not he relies on an element of chance, and failure after failure is the result. An architect can only put into a building what he has assimilated; to the uninitiated the work may appear satisfactory, but to the scholar, or even to the layman with the critical outlook, such works convey no cheering message.

There is something in life which the true artist is always pursuing—it is the quest of the ideal. He can never attain his object; the chagrin he experiences is very poignant, the slight successes very sweet; yet all unknown to himself he imparts an element of sadness to his works which lifts them out of the common into the sphere of nobler things.—The Builder, London, England.

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Plastering Old Brick Walls

In applying stucco to old brick walls, the most important point is that the old surface must be thoroughly cleaned. If coated with paint, this must be scraped or burned off, and if uncoated, the surface must be washed with a solution of muriatic acid mixed in the proportion of one part commercial muriatic acid to five parts water. The wall should be scrubbed with this solution, then thoroughly cleansed with clean water. In Oakland the old brick walls of the Athletic Club five-story building, which is being converted into a theater, have been perforated with hammer and chisel and the little cavities thus made in the brick are intended to serve as a binder for the stucco surface.

An American Quantity System*

By G. ALEXANDER WRIGHT, Architect.

SOME months ago I was honored with an invitation to prepare a paper for your Society upon the Quantity System of letting contracts, in other words, payment to contractors according to measurement of work actually performed.

But when I reflected upon the amount of experience which the members of the Society of Constructors represent collectively, I hesitated. Then again I felt at another disadvantage, having at one time myself been a constructing officer in a government department (across the Atlantic) and the old feeling instantly assailed me and I wondered what my chief and the department would think, if I had the temerity to import an individual opinion into official work and suggest any new departure, and what the effect might be afterwards, upon my future seniority! I am unaware whether such conditions prevail here. I do recall that in the old days during temporary attacks, (bordering I suppose upon the insubordinate), one was apt to think that it was much harder to dig a trench, drive piles and set stone for the government department than it was for a private individual. Increasing years, however, mellow experience in most of us, which should be beneficial perhaps, especially to those who may be working under our direction or supervision. But when I read in the Journal that the Society of Constructors was a mutual organization, having no "official" connection with the treasury department, I felt relieved, and that I was to address men of experience who would at least be tolerant in their criticism.

I shall confine myself strictly to what I know from personal experience with the Quantity System and which commenced more years ago than one cares to think of, but I have always endeavored to keep in touch with its practicability, and its successful application to both government and private work, engineering as well as architectural.

The Quantity System (sometimes incorrectly referred to here as Quantity Survey, Quantity Survey System), is in successful use in various forms in most English speaking countries. In the United States certain of the principles or portions of the Quantity System are in use, for example, in the U. S. War Department, certain municipalities, among engineers also (rather than architects) the tendency has been in this direction. We already use unit prices. Lumber and hardware lists are prepared in detail for the purpose of getting prices. We have competent computers (notably in the Treasury Department itself), but we do not go far enough. We are also woefully lacking in the very first elements of the Quantity System, viz., a convenient standardization of the modes of measuring mechanic's work in every trade, which goes to make up the building business. It is only necessary here to mention one illustration, namely, the "perch" standards as applied to stonework, and which differ according to locality.

The creation of proper standards of measurements is quite essential. Possibly the zone system may be advisable. Owing to different local customs and practice, it may not be convenient to make all standards universal; that is just one detail for study and investigation.

The essence of the Quantity System lies in its absolute fairness to both contractor and owner, the former being paid and the latter paying, only

*A paper read before the Seventh Annual Convention of the Society of Constructors of Federal Buildings, at Washington, D. C., January 6th, 1916.

according to measurement of work. Guesswork is eliminated. Everything in a building can be, and is, definitely measured and described in the document known as the Bill of Quantities. Clear, carefully prepared drawings, details, and specifications are essential. Such, for example (and I am glad with the opportunity of saying this), as some which have been issued by the Treasury Department for post offices, etc., and which I have had the opportunity of examining. I have read whole number 36 of the Journal, page 37. It may be that I have been unfortunate, but the gentleman whose remarks are there reported should have seen some drawings and documents furnished to bidders for private work and which (for arbitration, and other purposes) have passed through my hands. But enough! The supervising architect need have no misgivings about putting his name upon such drawings as I have seen. The speaker, however, was probably indulging in a moment of pleasantry, as we are all apt to do at times. Even that has its merits, at the proper moment, in carrying on building operations.

The drawbacks of the present estimating system, or rather want of system, are many. They are universally known and admitted. Briefly, however, it will serve the present purpose to recall a few of the most serious.

First, there is the enormous waste of time and money by bidders all going over the plans and specifications, all doing the same thing, all covering the same ground, without arriving at the same result, in fact, competing with each other as to how much material a building will take, each one apparently trying to see how little he can take off; anything, so long as he can beat the other fellow. This is gambling, not competition, nor legitimate estimating, consequently when it comes to pricing the items it is obvious that the bidders are more or less handicapped, no two bidders start on the same basis. No two bid on the same quantity of materials or labor. Some may be about right, others have too much, others too little. These latter are the men who, through their mistakes in taking "short" quantities, as it is termed, so often land a job and beat the more competent bidder, who by being extra careful and accurate, does succeed in getting his quantities off more correctly, but if the truth must be told, the more careful and accurate a bidder is the less chance he has of getting a job. Is any system which favors those who make the biggest mistake commercially sound? Is it business? Is it worthy, let me ask of a government department? Does this loose method pay those who put up buildings in the long run? Is it the best we can do?

The trouble which superintendents and architects have with a certain class of contractors in carrying on work does not arise so much from the contractor's desire to make an unfair profit, as it does from his efforts to keep his losses down as much as possible, or at least to "break even," as we say. What would any man do under similar conditions? It is our wretched system, not the bidder, which is at fault. The lowest bid, which is the one most generally accepted, is usually anything but the most accurate (except from the owner's viewpoint) and correspondingly, the bidder is, under present methods, not always able to give the best service, for that reason. So true is this in private work, let on the so-called competitive system, that the average building contract, from start to finish, has degenerated into a game of chance, a gamble, an unhealthy contest. Such uncertainty is in itself a disturbing element. Why should not all bidders figure on identically the same thing, from the same starting point? The quantity of work in a job is the same, whichever bidder does it. Why

should they not all figure on that quantity? Unless it be that owners want to see who will make the greatest "mistake." On the other hand, is not an owner entitled to know, if he so wishes, what he is going to get, before he binds himself to pay out a large sum of money? If the same owner was about to buy a large tract of land, we will say, of irregular shape and grade, he would want every detail and boundary definitely fixed, every corner clearly defined, but this same man, owing to a questionable custom, will sign a building contract for half a million or more, and what does he know about it? or what is he going to get? He has seen a picture of his building, but it is a long, thorny stretch between that and the finished structure, which he expects to get, for a certain price. He has seen the drawings and specifications, and perhaps the details. Granting all this, there is still to him a sort of mystery about how the cost of his work is arrived at. He understands very little about it, and but few will take the trouble to enlighten him.

If, however, an owner could see some document in real figures, a list of everything that he is going to get for his money, he would be surprised at the quantity of it. He could see that much, and would be far less liable to think that contractors had put up a job upon him and run the cost of his building up unnecessarily. The mass of figures and information that a Bill of Quantities presents would appeal to him because he could read and understand figures far better than he can read drawings. There should be no mystery about these plain matter of fact business requirements. There is no unsurmountable privacy nowadays in such things, the periods of the trade guilds and accompanying secrets are over, only the traditions remain. This idea of keeping all such information from the owner, which is more or less prevalent, is a false notion, a survival of bygone times. There should be no mystery at all about it.

It would be interesting to know how many, or what percentage of the contractors themselves could, if put to the test, take a set of plans and specifications for a quarter of a million dollar office building of today and personally take off all the quantities in detail in each trade and price same correctly without outside assistance. Very few. Yet many private owners think that is what is done, and that is why they expect so much from the contractor. Such work requires training, it is not merely a question of mathematics as some may suppose. A knowledge of architecture, sound construction, and engineering is essential in a competent Quantity Surveyor, in fact, in older countries many of them are trained architects or engineers before they feel competent to establish themselves as Quantity Surveyors; but this phase of the subject is something which is very little understood in this country—as yet.

Old customs die hard, but they never died more rapidly than they do in the present age, because it is a progressive age and we are a progressive people, ready to adopt that which is good or more efficient, and to drop that which, owing to modern advancement and science, has become insufficient, and which is the case with our estimating methods, good enough perhaps in the period of tallow candles, but insufficient for today. And it is this fact which is largely responsible for the cutthroat practices adopted by bidders themselves, and which have brought the building business of the country into a degenerate condition, so that it is next to impossible for an honest man to remain in the business and pay one hundred cents on the dollar if he relies upon competitive figuring to get work.

The Quantity System possesses many advantages; among others, the professional Quantity Surveyor is specially trained for this particular work. He is expert in examining and checking drawings, details and specifications, their clearness and accuracy, particularly so from the estimating viewpoint. Occupying as he does an independent position, he can afford to be more critical than any bidder when figuring a job. It is his business, his very training promotes an analytical frame of mind. He is paid for this, bidders are not. Should bidders discover any error or omission in plans and specifications, and they often do, they do not tell other competitors, at least not until after the low man has signed up.

When the Quantity Surveyor discovers any omission or discrepancy, small or large, it is during the period of his friendly collaboration with the architect himself, and all such matters are then adjusted before the final blue prints are made. Bidders then never see such things as they now sometimes point out.

The object of bidding is to give the cost; the money value in dollars and cents, not the quantity of materials and labor of all kinds. The owner should state what quantity of material, etc., it is that he requires. The only duty of the bidder is to use his judgment and put the cash value on such work as may be submitted to him. It is not his business to figure out quantities; he has neither the time nor the training, and moreover, he is not paid to do this part of the work, any more than it is his business to figure floor loads or anything else of that nature.

It will be seen, therefore, that in the Quantity System there is a considerable saving of waste in bidders' time, and that the drawings and specifications are, after passing through the Quantity Surveyor's hands, as free from anything which might lead to controversy later as it is possible to make them. This in itself will be found a great help in superintending construction, as many of those vexatious points which now necessarily arise will have already been settled, before the contract was let.

Safer and closer bidding will result, with the assurance to the lowest bidder that he is "safe," so far as the quantities are concerned. The Bill of Quantities should, the writer believes, form the basis of the contract, and be one of the contract documents. A "safety first" doctrine for the contractor, and also for the owner.

At present the owners naturally pay the contractor's overhead expenses, which are increased unnecessarily under existing methods, and they could well afford to pay the Quantity Surveyor's fee of one per cent or more, according to the type of building, and service involved, and still save money owing to the clearness and advantages of this system. He takes no chances. Of course, it must not be expected to furnish a remedy for every evil in the business. It will not take the place of good material, or proper attention on the part of the contractor, nor will it help to keep crooks out of gaol, but it will establish an equitable basis for proper dealing between owner and contractor. There is no such efficient basis now, and if ever it was necessary, it is at the present time.

Upon the establishment of the Quantity System, interpretations of contract documents after a contract is signed will be a thing of the past, the necessity for them will be discovered by the Quantity Surveyor when he is preparing the Quantities, misunderstandings, alleged or otherwise, will be reduced to a minimum. Contractors will have no disputes with their sub-bidders as to what they include in their figure, the Quantities will show exactly. Contractors not having to spend half their time in figuring,

will then have time to attend to their buildings in progress, and incidentally to supervise the work of their sub-contractors. Architects need no longer be under obligations to contractors for preliminary estimates. Such matters would be dealt with equally as well or better by the Quantity Surveyor. No change or reorganization of the architect's office is required as is sometimes thought.

Quantity Surveyors retain established offices of their own, and occupy a confidential position, a sort of clearing house, or independent arbitrator on Quantities, between owner and contractor, both before and after a contract is signed, the architect being thus relieved of such duties as straightening out changes, claims for extras, etc., except such supervision as he may wish to exercise.

The writer does not recommend the adoption of what is too often referred to as the English System, for the very reason, perhaps, that, having had many years of training and practice with it, he knows its defects for American conditions. What is required is an "American" Quantity System, practical and all sufficient for our needs, without unnecessary elaboration. Such a system, involving much thought and labor, had been laid out by the writer prior to the year 1906, but most things burnable in San Francisco were destroyed by fire during April of that year, and the draft "American System" went the way of most other things.

How can the Quantity System be adopted? In the first place, standardization and rules for measurement for all classes of work are essential as already suggested. Secondly, the United States Government itself should take the lead in establishing this much needed reform, especially as the saving and betterment are manifest. Lower bids would follow owing to greater detail and clearness of quantity required when being figured. There being no "chances" for each bidder to take on the quantity of material required, they naturally figure closer and with greater accuracy, so far as missing anything is concerned. It is found, too, that better construction results are obtained. It is not unlikely that this may also have some bearing upon the cost of future maintenance.

The writer, upon one or two occasions, when in Washington had the pleasure of discussing the Quantity System with the late Supervising Architect and as a result for some time felt hopeful that some day the Quantity System may be tried out by the Treasury Department. The first step, however, should be towards standardization and determining the best modes of measurement of work, in order that bidders and others may clearly understand the descriptions and form of bill when they are invited to figure.

It is disappointing somewhat to feel that the officials of the United States Government have not been permitted to assume any fairer attitude towards bidders than the common one, of which a certain type of owner is not slow to take the fullest advantage. In short, if a bidder makes an honest mistake in taking off his items, as I hear they frequently do in Treasury Department work, the Department benefits, at the expense of the citizen, who is certainly not human if he does not watch his opportunity to get even. If such a bidder is financially able to pocket the loss, well and good; if not, it is said he fails! Such then, I believe, are the facts under the present imperfect method employed in securing competitive bids. This, of course, is no fault of the officials themselves. It is now pretty generally understood that the way of inviting bids is antiquated and unsuited to modern construction methods, and to the securing of the best results.

To put the matter plainly, here we have probably the most important department of the government adopting precisely those methods in inviting bids which a certain class of unscrupulous private owners follow when they aim at getting "something for nothing," the kind that lie waiting to catch the unwary bidder, who by reason of the very methods employed in getting his bid, must sooner or later make a mistake in quantities, fall by the wayside and fail, if he cannot survive the loss! It seems inconceivable that such a system should be followed and encouraged. The worst type of private owner pursues the same tactics, and cannot sign up a contract too quickly when he has reason to think a bidder has made a mistake. It is a sad spectacle!

But to resume. Under the Quantity System of inviting bids, bidders would be furnished with a printed or otherwise duplicated copy of the entire Bills of Quantities, segregated, and in separate sheets for every trade, so that bidders may supply copies to their sub-bidders to estimate upon. Bidders price the items and retain their copies of the Quantities, and make out their bid upon the proposal blank furnished. The lowest bidder then brings his set of quantities to the architect and they are examined in the contractor's presence sufficiently to see that the arithmetic including footings are correct, after which the Bill should be sealed and put into a safe deposit or other secure place and only released upon joint request of and in the presence of both contractor and architect, usually at the end of the contract, and after the Quantity Surveyor and contractor have agreed upon the quantities involved in the additions and omissions ordered to the work during its progress. These variations are embodied in a Bill of Quantities made upon the same basis as the original Bill, and the contractors' unit prices therein are used in pricing all variations from the original contract work, thus there can be no dispute on either side about value of extras or omissions, the method of adjustment to be followed having been clearly set forth in the original Quantities and each bidder notified therein that he should price all his items accordingly.

In some Government departments, i.e., in countries where the Quantity System or payment by measurement is in vogue, another application of the Quantity System has been proved to be advantageous and for that reason is followed, for example: Complete printed schedules of every conceivable item that can arise in every trade in a structure are prepared by the Government, with every item carefully computed and priced at current rates. Then when bids are required (for example, repairs, maintenance, additions or other work to barracks, forts, hospitals and even buildings), these printed and priced schedules are issued to all bidders with an outline of the volume and character of the work required and location or locations, where it occurs. The bidders examine the printed prices in the schedules, and their proposals are based thereon, subject to whatever percentage of change the bidders deem necessary. For example, it may be ten per cent above, or four per cent below such prices, more or less, just as they see fit. Some of the work is standardized and this also facilitates matters. The work progresses and is then measured and priced at the printed prices in the schedule, and whatever per cent above or below is named or bid by the best bidder in his proposal, this is added to or deducted from the gross amount. The balance is the total of the contractor's bill, upon the percentage basis which he himself established when bidding. Many years' practical experience with this method of doing government work prompts me to suggest that for equity, expedition, facility of supervision and sound

construction it is in certain cases hard to beat. For other work, regular bills of quantities are furnished to bidders.

The Quantity System undoubtedly saves money to the owner and is an insurance to the contractor against loss through short quantities. It is a mistake to suppose this method means additional cost. If it did, it would not be so largely and generally adopted abroad as it is. Experience has demonstrated the fact that not only is the cost less, but it promotes greater satisfaction and is conducive to better work. Such is my experience after twenty years of work with the Quantity System and twenty-odd years of active work here without it. In fact, where good, honest work and methods are required there is no comparison between the two methods.

Assuming the annual expenditure of the Treasury Department to be now about eight million dollars and putting the saving and benefits under the Quantity System at the very low figure of 5 per cent, the saving to the Department would approximate about four hundred thousand dollars a year, at an extremely conservative figure, and which, when the detailed workings of the system were thoroughly understood and in practical operation, could, I feel certain, be increased. Even the sum named would provide a fund to pay the preliminary work of standardization, and the subsequent expense of a special computing staff to prepare Bills of Quantities to be furnished to all bidders with the drawings and specifications. It is, of course, the "method" only of securing official bids which the writer criticises, and regarding which the necessity for reform is respectfully suggested. Officials are usually unable to do much in the way of betterment until better methods are decided upon by their chiefs, but there is reason to believe that such a change would not be regarded with disfavor by those who know, and by others who have for years been contrasting the methods hitherto employed with others which give more accurate and better results.

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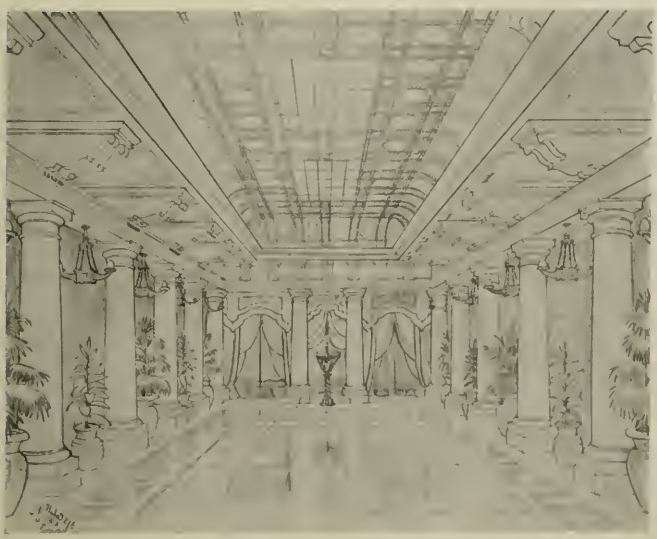
The President's Summer Home

Says Architecture: There has been a great deal published in the papers about the summer home of the President at Elberson, and this house has been praised repeatedly as being a very wonderful example of American country house design, beautiful and elegant, and perfect in every respect.

Now there is practically no one thing that does more harm to the taste of the general public than to see just such places of design as this McCall house at Elberson illustrated as beautiful and commendable. It seems a misfortune that the chief executive of our nation has not selected for this coming summer a house as worthy of the best of our American tradition as the house in which he has passed the last two summers of his tenure of office, and it is characteristic of the rather low standard of taste prevalent in the daily press of the United States that this McCall house should have been so widely exploited as a beautiful piece of architecture, while the Churchill house was usually spoken of as a "pleasant, modest place."

There does not seem to be anything particular for us to do about it, and yet we believe that it should not be passed over without some editorial comment in this magazine, and we wish to urge all of our readers to let pass no opportunity of uplifting public taste by commending good architecture, and condemning bad, especially where it is in any sense a concern of the general public.

MASONIC TEMPLE, AUBURN, CALIFORNIA
A. D. Fellows, Architect



INTERIOR PROPOSED CHAPEL EXTENSION TO CREMATORY, CYPRESS LAWN CEMETERY
B. J. S. Cahill, Architect

Relation of the Architect to the Contractor*

By JOHN C. AUSTIN, Architect.

ARCHITECTURE is the world's history written in materials more or less perishable.

When one learns of the civilization of thousands of years back, all of the knowledge that has been obtained has been through the remnants of the buildings that are left to us.

We can judge by the buildings whether the people who used them were war-like or pleasure-loving and licentious. We can also judge of their religion; in fact, most of the very ancient buildings that are left to us were those erected to some mythological god. India abounds with ancient temples; Egypt has many; and those in Old Greece are still a standard that the architect of to-day would be a veritable tyro unless he had studied and unless (to a great extent) he copied.

Later than the Greek and Roman periods came the Gothic, which in my opinion is the most heroic and glorious of all styles. This style also was brought to its highest peak of beauty in the religious edifices; though, strange to say, there is a tradition that the most beautiful cathedral of all was designed by the devil, and the plans turned over to the architect in return for his soul; I refer to Cologne Cathedral.

Then we come to the Renaissance, which is simply a return or a continuation of the classic forms made to fit more modern conditions.

I have sketched quickly the work that architects have accomplished in the past, and have tried to state the fact that the architect has had much to do with the world's progress.

To-day the architect is performing the same function that he did in ages past; he is writing in everlasting materials the history of this age for the perusal of those who will follow us. If a community is sordid and materialistic, the buildings most assuredly show that influence. Where a cultured community exists, then you see the evidence in its buildings, which show in every line culture and education.

Therefore, the practice of architecture must be a life study; it cannot be taken up lightly; every day it becomes more complex and intertwined with its brother, engineering. Architecture is calling in more elements to assist it every year—steam, compressed air and steel. Every year shows new inventions that make buildings more luxurious.

An architect who keeps up with conditions must give all his time and all his energy to that end; he cannot be half a contractor and half an architect, because both businesses, while necessary to each other, cannot be mastered by one head.

An architect should be a good business man and a just one; fearless in carrying out what he knows to be his duty, which is that of an unbiased arbitrator between the owner and the contractor.

In my practice I find that the owner is never averse to receiving a little more than his contract calls for, nor is the contractor averse to rendering a less service than he knows he should give.

The architect in every case should be unbiased in his judgment, and just to both sides.

Looking at the contractor's side of the case, my experience tells me that the only safe contractor to deal with is the one who knows his business, one who can do at least some of the work on the building himself.

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*Abstract of a paper read before the Master Builders Association, Los Angeles.

I regret that the old system of apprenticeship has gone out of fashion. Each of you can mentally run over the list of contractors who have made a success in their business, and I will venture to say that 98 per cent are those who started with a good education and learned the business of construction from the bottom up.

The most dangerous contractor to deal with, I think, is the one who depends entirely on someone else for his information; his foreman is the one who runs him; he is simply a jobber, who sub-lets everything after squeezing a small profit from each sub-contractor and in many cases allowing the sub-contractor to supply more inferior material than the contractor has guaranteed to furnish, in order to make a few precarious dollars.

The contracting business is an honorable one, needing brains and capacity, a good knowledge of construction, and a purpose to "render unto Caesar the things that are Caesar's."

I maintain that a man has all he can do in one lifetime to be a good architect; and I take the same position with that of a contractor. If one tries to be both, he becomes a "Jack of all trades and master of none."

I know that the American Institute of Architects wishes to work along all legitimate lines to the betterment of building conditions.

An architect who usurps the position of the contractor, or vice versa, will undoubtedly be a failure. The contractor who acts in the capacity of an architect usually is trying to build in a manner cheaper than the architect can do; it isn't because he can buy cheaper than the contractor who follows the beaten path, but because he can cover up cheap construction.

* * *

Some Recent Developments in Schoolhouses

RECENT progress in American school architecture has been almost wholly in the direction of refinement of plan and design, and the past year has given evidence of no radical departures or innovations which denote a permanent tendency in type, construction or equipment. There have been, however, some interesting examples of the acceptance of principles which were first enunciated less than five years ago, and it may not be amiss to review several of them.

The one-story type of school house, which was originated less than five years ago on the Pacific Coast, has received wide acceptance during the year just past. Architects in a number of cities have made important improvements on the pioneer examples in Oakland, Cal., and Rochester, N. Y., in the direction of compactness, ease of circulation, and permanence of construction. The new buildings in Highland Park, Sioux Falls and Kansas City exhibit a very clever double use of the assembly room, stage and kindergarten and a splendid insight into the social center possibilities of the school plant. In the direction of low first cost, safety and elasticity the one-story buildings have not been excelled. The type has still to demonstrate its absolute economy in operation and maintenance. There is evidence that it is slightly more expensive to heat and ventilate in a cold climate, and there are some doubts concerning the cost of keeping roofs, etc., in repair. Principals and teachers are not a unit in believing that the administration of the one-story schools is as easy or efficient as two-story buildings, and there are many who see in the multiple use of assembly hall and kindergarten a cause of disturbance that is not unlike a fundamental defect which relegated the old Lancastrian school into oblivion. It is worth more than a passing mention to note that the London schools illustrated on another

page do not contain the familiar central hall of the one-story school. This central hall has until just recently been a feature of practically all British school houses and may be traced back to the Lancastrian period.

In the planning of the older multiple-storied school building, the greatest recent advance has come as the result of the adoption of the Gary scheme of alternate study, work and play in the New York City schools. In planning new buildings and remodeling old ones for this use, Mr. C. B. J. Snyder has eliminated the basement, except for heating and ventilating apparatus, and has turned the entire first floor into a playroom, a gymnasium, a workshop and a large auditorium.

Perhaps the most original current work in school architecture will be found in the junior high schools which have been erected in several cities. They include the seventh, eighth and ninth grades and follow in organization and management the best practice in the departmentalized grade schools and smaller high schools. The buildings have large combination study and class rooms, small recitation rooms, shops and a small laboratory. The junior high school is still too young as a type of school to predict the ultimate character of the school house which will be best fitted for its work.

In the construction of school buildings there has been a notable awakening in the direction of fireproofing. The Peabody fire showed clearly that complete fireproofing is highly desirable and that safe exits consisting of non-inflammable corridors and stairways, separated from class rooms, basements, etc., by a positive fire and smoke stop, are essential to the lives of the pupils. Just here there is much need for education not only of school boards but of architects and the public as well.

Legislation for the year 1915 has not been as general or effective as might have been expected. In Illinois a splendid law compelling adequate ventilation and sanitation and fixing general standards for safety and completeness was enacted and put in force. The effects, which will not be noticeable for a year or two, will undoubtedly show a complete revolution in school building standards in the rural and village schools. Very complete rules for school house construction were put in force in the states of Minnesota and New Jersey. These fix definite minimum requirements for school buildings. They show what immense benefits are possible through a rational, flexible plan of state control of school architecture.

A gratifying improvement in the exterior appearance of some larger schools has resulted from the study of the possibilities of planting the school grounds with shrubbery and grass and arranging for the development of stairs, walks, balustrades and fences in harmony with the building. It has always appeared to us to be an artistic crime to set a well-designed, expensive school house in the midst of a barren waste of playground. A modest amount spent for developing the school grounds into a beauty spot worthy of a splendid school which it surrounds is never wasted. It is just as essential to the education of the children as any feature of the building.

The single greatest unsolved problem of school house construction is that of cost. The rising building market, the requirements for vocational education and the demand for the wider use of the school house have all combined to add to the cost of new school houses. Our system of covering new school construction by bond issues is at best an improvident public policy. It deserves not only study but positive action in the direction of a general acceptance of the plan of "pay as you go."—School Board Journal.

Why Our Architecture Leans to the Classic

MR. HARVEY M. WATTS is of the opinion that the real underlying reason why American architects turn almost sub-consciously to the classical models, when the commission is one that calls for a structure in which dignity and beauty are to be blended, is because of the irresistible appeal which the old forms are still capable of making to the imagination of the average man. To quote Mr. Watts:

"Just why we like these forms of architecture from the olden, so that few enter the great waiting room of the Pennsylvania station in New York without having an uplifting sense of the 'grandeur that was Rome's'—for it is an almost exact copy of the typical vaulted hall of a Roman bath, which was a club, public library, hotel, a gymnasium and palace all rolled into one—is again being asked these days, not only here, where the art gallery is still being criticised by those who 'want something else,' but in Congress and other legislatures where there is the eternal querying as to 'why the Lincoln Memorial should be built in the style of the Parthenon,' or why architects should go to the Forum for their inspiration when they would build triumphal arches.

"Despite all the bucolic iconoclasm of the farmyard school of critics, which would even have us develop an 'American style of architecture' and throw off the bondage of the Old World and the classic period, and despite the rude virtues which so many Congressmen seem to think lie in dubbing a Greek temple or an Italian palace 'un-American,' the fact is the architectural world of America was never in stricter accord with the great architecture of the Italians than now. What the World's Fair at Chicago began in 1893 was continued at St. Louis and elsewhere at all the intermediate exhibitions, and has been again confirmed by the architecture of the superb buildings at the San Diego and San Francisco expositions. Hence, when anyone asks why this return to the 'classic,' using the word broadly, it would seem the answer is that it is a return to the fundamentals that have the deepest human appeal.

"Hence, it is not only the most natural but the inevitable thing that the new art gallery in Philadelphia, and this is also true of every art gallery built recently or remodeled anywhere in the country, should be severely 'classical' in style. The 'splendor that falls on castle walls' is one thing, but the splendor of moonlight or sunlight that falls on great masses of ordered masonry with pillared porticos seems to grip the average individual of the twentieth century very much as it did the Egyptians 5000 B. C.; the Roman or the Greeks.

"Explaining how the rigid following of the rules of some of the old authorities had given the Romanticists a chance to attack the classic architecture as 'imitated, academic and unalive,' which was the attitude of many in the eighteenth century, Geoffrey Scott points out that it was the spirit and the life which the Italians put into their application of the older architecture to the needs of their day that carried everything before it then, as it seems to be doing to-day with us. As he puts it:

"'An art is academic in this harmful sense when its old achievements crush down the energies that press toward the new. But the academic canons of the Renaissance did not represent the past achievements of the Renaissance, but of antiquity. To the Renaissance they were the symbol of an unsatisfied endeavor; the source, consequently, not of inertia, but of perpetual fruitfulness. The pedantry was superficial. Beneath this jargon of the "Orders"—to us so dead, to them so full of inspiration—the Italian architects were solving a vast and necessary problem. They were leading back European style into the main road of European civilization—the

Roman road which stretched forward and backward to the horizon, sometimes overlaid, but not for long to be avoided.

"'They were adapting, enlarging, revivifying the forms of the antique to serve the uses of the modern world. The change was deeply natural. Europe no longer recognized itself in the hopes and habits of its immediate past; it did recognize itself, on the contrary, in that remoter and more civilized society in which it had its origin. The medieval styles had run their course and outlived their usefulness. To have resisted the logic of events, to have clung to the vestiges of local Gothic—vital and "rational" as in their times they had been, picturesque and romantic as they are in their survival—this in truth would have led, in a few generations, to a state of architecture as unalive, as falsely academic, as were the shames of archeology three hundred years later. For an academic tradition, allied as it was in the Renaissance to a living sense of art, is fruitful; the academic theory is at all times barren.'

"And this final rule or law of appreciation by Scott will do very well with which to square the reason for the Lincoln memorials that are Roman or Greek temples, or art galleries that are Italian palaces or Roman basilicas, or, as in the case of the one that is to crown the hill at Fairmount, the living adaptation of various types of classical and Renaissance architecture assembled and welded into a harmonious whole."

* * *

Model Homes Planned for Washington

PLANS have just been completed for the erection of a series of model homes in the city of Washington for the purpose of demonstrating to the nation the relationship between good housing and good health. These are to be known as the Ellen Wilson homes, and are not in the nature of an experiment, but are intended as a demonstration to the entire United States.

The intimate connection between bad housing and bad health and good housing and good health is clearly recognized in Washington, where the alley dwellings have long been a matter of concern both to the health authorities and to public spirited citizens who wish the Capital City to be an example to the nation. The alleys have been paved, sewers and water mains have been laid in them; they are lighted and cleaned as are the streets. Yet they keep their old lead over the streets when it comes to totaling the figures for disease and death.

In this, Washington's experience has been like that of Liverpool and other European cities which tried unsuccessfully to make badly situated dwellings wholesome by cleaning and fumigating. After thirty-three years of unavailing effort to improve that which was fundamentally bad, Liverpool finally decided that the only hope lay in wiping out its insanitary areas. It demolished the old houses by the acre and in place of them built new houses. Where dwellings have been crowded so close together that there was scarcely passage room for a stout man to squeeze his way to one of the old rear houses, it built new dwellings opening upon wide spaces which provided light and air. Immediately sickness and death decreased—and with them vice and crime. What had seemed a hopeless struggle for more than a generation was won.

Other cities in Europe have done the same and with the same results, but what makes Liverpool's figures of unusual value is that the new houses are occupied by the same people who occupied the old ones. In some cases the population on a given area in the new dwellings is 99 per cent the same as that which lived on the area in the old buildings. So here the effect of

housing is not complicated by questions of different occupants, of better food or clothing or a generally higher standard of living. The housing only has been changed and the results are striking.

Washington is attempting much the same work, though in a less dramatic manner. Congress has enacted a law which goes into effect on July 1, 1918, according to which all the alley dwellings in the District of Columbia must cease to be used for dwelling purposes. Meanwhile, in order that there may be accommodation for those who will be forced to seek new homes in street houses, there has been organized a limited dividend company which is to build houses that will be not only sanitary, that will provide not only abundance of light and air, but houses attractive architecturally, home-like in their arrangements and containing bath rooms and provisions for hot water in place of the old outdoor closets and hydrants.

Such houses as these cannot, of course, yield the return upon the investment that the old houses did. In fact, Congress in its act incorporating the Ellen Wilson homes, limited its dividends to five per cent net. But they will yield to their stockholders a dividend in the form of satisfaction because of a needed work well done.

* * *

California State Building Competition

Architects throughout the country are manifesting keen interest in the proposed competition for a design for the new California State Building to be erected in the San Francisco Civic Center at a cost of one million dollars. The programme is now being prepared in Sacramento by State Architect George B. McDougall, and it will probably be completed in another month, if not sooner. In the meantime it will be decided whether to admit the architects of the entire country or confine the list to California members of the profession in good standing. After the general competition, it is proposed to select ten of the best designs and their authors will then be invited to submit a second plan. The architect or firm of architects whose work is considered most satisfactory in all respects will be chosen from the ten to prepare the final drawings for the building. It is understood that the jury will be composed of seven members—Governor Hiram Johnson, Chief Justice F. M. Angellotti, Attorney-General U. S. Webb, State Architect George B. McDougall, and probably three architects to be named by the American Institute of Architects. This would give a majority of architects on the jury. The State Board of Control and Governor Johnson have already held a number of meetings to discuss the size of the building and its numerous requirements.

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The Life of Paint

A few years ago the editor went carefully through three large treatises on paint, searching for definite data on the life of paint, but found nothing. It is a curious fact that, despite the reams of paper that have been used to exploit the virtues of paints of all kinds, next to nothing has been printed on the actual life of given paints under stated conditions.

Wide variations in temperature and exposure to moisture, particularly within twenty miles of the sea, undoubtedly shorten the effective life of any paint on steel or iron. Perhaps the life may then be not more than a year, or possibly two years. On the other hand, paint on wood in a dry climate and not exposed to great temperature changes may last five or possibly eight years. But few observers have ever taken pains to record and publish the actual life of paints used on buildings, bridges and other structures.—Engineering and Contracting.

Review of Recent Books

of Interest to the

Architectural and Engineering Professions

CITY PLANNING—WITH SPECIAL REFERENCE TO THE PLANNING OF STREETS AND LOTS. By Charles Mulford Robinson. G. P. Putuam's Sons, 2 West Forty-fifth street, New York. Illustrated. Price, $2.50.

This is a book which one can praise highly. It is thorough. It is prophetic. It is opportune. Coming at a time when throughout the United States sporadic attempts at city planning are on the increase, it is destined to give direction and bring order to much that is now haphazard.

The broad significance that is given city planning is exhilarating. City planning, says Mr. Robinson, "is a product of philosophy, of sociology, and of economics as much as it is of engineering." Yet his breadth of vision makes him in no sense "visionary." The book is a compilation of data on street platting that is as extensive as it is illuminating. Good street platting being to Mr. Robinson a thing of primary importance in city planning, he has accumulated material that is well calculated to convince even the most skeptical of his point of view.

The work is arranged in three divisions, the first being devoted to a presentation of the economic and social disadvantages of standardization in street platting, the second to constructive plans for functional street platting, and the third to city planning legislation.

In summing up his work Mr. Robinson writes:

" . . . Consideration of the width and arrangement of streets, far from being a by-path of investigation, proves a broad highway. All the currents of life, all the grades of society are intimately affected by the problems it includes.

" . . . The street thus studied gains a new dignity and value. No more can it be despised. We shall not dare to speak in reproach of those whose existence is closely bound to it—as 'the children of the street,' the 'women of the street'—for we find that the fortunes of us all are affected by it. It is more than a passageway, though even as a passageway it is the channel of the common life. It makes the boundary of our homes, it gives us our outlook upon the world. In fact, the streets make the cities what they are, and the cities make the world. . . . The street, then, is to be thought of, not as a line in a drawing, not as a mark on a map, but as a living thing.

"Behind town planning, writes George Cadbury, Jr., in his book on the subject, 'there are the deepest and most permanent instincts of mankind. . . . The desire for order, for health, and for beauty.' We may have faith, therefore, in its triumph."

While the present volume is nearly all made up of new material, it contains the author's previous "Width and Arrangement of Streets."

THEATRES—THEIR SAFETY FROM FIRE AND PANIC, THEIR COMFORT AND HEALTHFULNESS. By William Paul Gerhard, C. E. Published by The Baker & Taylor Company, 354 Fourth avenue, New York. Price, $1.00 net.

This little volume presents its matter in the forceful and comprehensive manner to be anticipated from so well-known an authority as Mr. Gerhard. The generally simple and always practicable suggestions he makes, if carried out, would transform theatres from places where all too often discomfort is endured and danger from disease incurred by amusement seekers, to buildings in which cleanliness and comfort would augment the pleasure derived from the play. Because it is much less satisfactorily dealt with in the average theatre than other sanitation problems, and because it is intrinsically more difficult of solution, the problem of ventilation is dwelt upon particularly, the relative merits of the "upward" and "downward" systems being treated at length.

The book is one of value to the architect and engineer, and to the entire theatre-going public. Not only does it point out what may be accomplished, but what the public has a right to expect and should demand. It emphasizes the fact that ultimately the practical application of the measures outlined depends upon the efforts of the public. Then, when managers have been impressed with their necessity, will the way be open for the efforts of the architect and engineer.

THE BUILDING OF IT. By Walter J. Keith. Published by Walter J. Keith, architect, 11 West Thirty-second street, New York. Price, $1.00.

A little handbook which might be of assistance to the amateur builder who wishes to superintend the building of his

own home. It outlines for him materials to be used and the general methods to be pursued in the various phases of construction. It prepares him to remedy as well as recognize faulty work and in how to build a home complying in the structural details with the basic conceptions of the professional builder.

THE LAW OF ARCHITECTURE AND BUILDING. By Clinton H. Blake, Jr., A. B., A. M., LL. B., of the New York and Federal Bars. New York: The William T. Comstock Company. Law canvas, 6x9 inches; 352 pages; price $3.00.

Some of the many interesting phases of the Law of Architecture and Building covered by this book are, "What constitutes an acceptance of plans"; "What constitutes an acceptance of the finished structure"; "The law governing the architect's certificate"; "The Legal relation of the architect and the owner"; "The relation of the architect and the builder"; "The compensation of the architect"; "The law of damages"; "The law of fixtures," and a most complete and illuminating chapter on "The law of mechanics' liens."

An ably written "Special introduction" by the distinguished architect, Aymar Embury II, lends interest to the book and appendices containing "Decisions for Reference Reading," "The Standard Documents of the American Institute of Architects," "The Professional Practice of Architects," "Schedule of Proper Minimum Charges," "The Canons of Ethics," "The American Institute of Architects' Schedule of Charges," and a full and varied collection of forms make the book complete.

COLONIAL ARCHITECTURE FOR THOSE ABOUT TO BUILD. By Herbert C. Wise and H. Ferdinand Beidleman. Published by J. C. Lippincott Company, Philadelphia, Pa. Illus., 269 pages. Price, $2.00.

Beginning with a brief historical survey of the ideals and the material resources upon which it was dependent, the most interestingly written chapters of this volume picture vividly the various forms taken by Colonial architecture. The very numerous, beautiful full-page illustrations add greatly to the charm of the book.

On the fly-leaf of the book the authors have written a quotation from Hallam, "No chapter in the history of national manners would illustrate so well, if duly executed, the progress of social life as that dedicated to domestic architecture." The subsequent pages demonstrate that the quotation is indeed well chosen. While the work is primarily descriptive of well-known old Colonial mansions, such as Hope Lodge, Mount Pleasant, Solitude, and Woodlands, it at the same time succeeds in weaving in the spirit that centered about those old dwellings, in incorporating the habits and thoughts of the people who enlivened their halls, so that it may be said to have historical as well as architectural value.

In addition to a very extensive array of facts and illustrations regarding Colonial residences, there are also several chapters descriptive of churches, council halls, court houses and other public buildings, rounding out a volume which may be read with profit by both the prospective builder and the casual student.

Building Material Exhibit Is Popular

The attendance at the San Francisco Building Material Exhibit at 77 O'Farrell street increased very perceptibly the past month, indicating that architects and others interested in building construction are disposed to take advantage of the suggestions and facilities which the exhibit offers. New exhibits are being installed right along and already the floor is comfortably filled with displays and working models of the various firms who have joined the Exhibit. Among the more attractive exhibits is that of the White Hardwood Lumber Company, which concern, by the way, was one of the first to install a booth. Other concerns that make an impressive showing are the Hauser Reversible Window Co.; Hughson & Merton, vacuum cleaners; P. Grassi & Co., terrazzo and mosaic work; W. P. Fuller & Co., paints and glass; National Mill and Lumber Co., Pitcher sliding doors and ironing boards; Ralston Iron Works, metal furniture; Standard Varnish Works, varnishes and enamels, and the T. H. Meek Co., cabinet work.

A Good One on Willis Polk

Waldemar Young in the Chronicle.

Willis Polk, architect and raconteur, has that delicious sense of humor that can see the joke when it's turned on him. Accordingly, he is telling this one with gusto:

He was on an O'Farrell and Hyde street car, standing on the running-board, and the conductor called out: "Pine and Hyde!" Three women got off, two chickens and an old hen.

Turning to the conductor Willis said: "Two to pine for and one to hide from."

The car gave a lurch at the turn and he bumped into a sour-visaged dame in the corner of the dummy.

"I beg your pardon," said Willis, politely.

"Don't you talk to me," she snapped.

"I simply begged your pardon," said Willis. "My previous remark about the name of the streets hasn't offended you, I hope."

She gave him a withering glance. "Dont you talk to me," she repeated. "I know who you are! You're Willis Polk, the nut!"

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KEEPING TO ONE'S STRIDE

It is interesting, at times, if you have nothing else to do, to consider the various sporting terms used in connection with different sports and compare them. In most instances the words, or expressions, mean something. As a rule they are more forcible than elegant, but they are intelligible for all that. Perhaps this is not true as to the writings about baseball. It must be admitted that outside of the box-score there is very little in the account of a baseball game that does anything more than fill space.

However, take harness racing, as a good example. Phrases used there mean something—possibly that is why harness racing is not generally popular. How common it is to hear it said of a horse, "he was thrown out of his stride," "he broke," or "he went up in the air."

Many a true sport has watched his favorite trotter or pacer take a couple of heats and see him coming around with a beautiful, graceful stride, and then as he neared the post, break and go up in the air, and lose the race. He could not stand the pace. It may have been an error on the part of the driver. The reins may have been too taut or too slack, at any rate the horse lost his stride and losing his stride he lost the race.

You find a parallel in human affairs. How often have you seen a man forging ahead with a good, steady, firm stride, and then when success seemed to be in his grasp, lost his stride, went up in the air and lost the race, to some plodder.

The successful man strikes his gait and holds to it. Even if he is obliged to take a hurdle here and there, he does not permit himself to lose his stride. He keeps his eyes on the finish line, his feet on the ground and pushes ahead.

SERIOUS DANGER TO BUILDING INDUSTRY

For ages past wood has been one of the most important materials for building purposes and until the introduction of steel and concrete was almost exclusively used in forested regions. The native forests of the United States were originally much richer than now in highly durable timbers. A century and a quarter of rapid commercial development have depleted them of certain of their choicest timber species and resulted in a constantly increasing utilization of material less resistant to decay.

This necessitates more careful attention in merchandising in order to supply a clean, sanitary product to the consumer. The problems of human health and timber health have much in common. A vigorous man may be, and often has been, likened to the sturdy white oak—resistant to disease; while the weaklings of humanity are, like our poorer kinds of wood, susceptible to whatever disease germs they may come in contact with.

One of the most important problems confronting the lumberman, then, is the storage and marketing of his product in as sanitary a manner as possible, both to prevent direct loss to himself through deterioration of his wares, and to protect the consumer against many avoidable outbreaks of rot after the timber is incorporated into buildings.

Recent investigations of the U. S. Department of Agriculture have revealed many deplorable conditions in the storage of timber and, coincident with these, have disclosed many serious outbreaks of rot in important structures. While many of these cases of rot in buildings may be due to faulty construction, particularly to insufficient seasoning of the timber before use and to the failure to provide for sufficient ventilation in basements, the fact remains that infected timbers placed in buildings are far more likely to cause trouble than sound ones.

Decay is due to the growth of wood-destroying fungi through the timber. These fungi consist of fine cotton-like threads which penetrate the wood cells and by the secretion of ferments dissolve many of the constituents of the wood. For their most active growth the timber must be moist and the temperature favorable. The true dry rot fungus (Merulius lachrymans), the most destructive fungus in buildings, grows best at 72° to 75° Fahrenheit, but there are many others which thrive best at 78° to 80°.

Poor ventilation favors rot by not allowing the timber to come to an air-dry condition quickly enough to prevent the development of the fungi.

Architects should see that only well-dried timber is employed, and that beams or joists are never embedded in concrete or brick without allowing for ample ventilation at the ends by "boxing." Also, particular attention should be paid to ventilating closed basements.

Fine Record in Architecture

During the years 1913-1915 the School of Architecture in Columbia University maintained as high a standard in design as any other school or atelier in the country.

The students in elementary, intermediate and advanced design submitted all of their work to the very severe judgments of the Society of Beaux Arts Architects' competitions, which are participated in by a large number of ateliers and universities throughout the country. This provided a severe test of high standard and an opportunity for comparison with the work of other schools.

Columbia received approximately 95 per cent of the mentions or higher honors. In addition to this many medals and prizes were won. Out of the three competitions that have been held for the Academy of Rome prize, which many consider the greatest honor that can be won by a student of architecture, Columbia has taken first place twice.

LOOK through the advertising pages each month. Make it a point to send for some of the printed matter offered by manufacturers and building material houses. And when you are writing or phoning for a contractor or material man to call and figure tell him you saw his card in The Architect and Engineer.

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With the Architects and Engineers

Just a Picnic for His Pen

Franz Herding, for more than a year chief draftsman in the office of R. A. Herold, architect, of Sacramento, is now practicing the profession in Los Angeles. He has temporary offices at 416 S. Grand avenue. The following letter is characteristic of Mr. Herding, who is an enthusiastic planner:

I enjoyed a fine spring trip in Southern California, and what I saw was a great, unique field for an architectural spree. Nature is so many sided and needs only, in order to show culture, to be touched by appreciative hands. But you see everywhere houses in screaming contrast with the beautiful surroundings. But we will hope for better days. The Exposition in San Diego is a very good example of what ought to come. If the spirit that it reflects has penetrated the public mind, and there will be action instead of boosting, that part of the world will become a land to live in and worthy of its wonderful climate.

I found here a new field of endeavor. Am designing for the Universal City all kinds of gardens, with the view of getting as many picturesque spots as possible. Just the thing for me, and I tell you it is just a picnic for my pen and brush.

Stockton Architects Organize

By FRANK V. MAYO, Secretary.

At a meeting in Stockton Monday, March 20, the Stockton architects met to organize a professional association aiming to unite in fellowship the architects of the San Joaquin Valley, and to combine their efforts so as to promote the artistic, scientific and practical efficiency of the profession.

The San Joaquin Valley Association of Architects consists of Regular members, who shall be practicing certified architects; Associate members, those who are in some way allied to the profession and the allied arts, and Honorary members. The conditions of membership are honorable service in the field of one of the above classes of membership.

Regular meetings will be held the third Monday of each month. The officers of the association are Joseph Losekann, president; L. S. Stone, vice-president; Frank V. Mayo, secretary-treasurer.

Architectural Club Awards

The following awards have been made successful member-students in the atelier of the Los Angeles Architectural Club by the director-judges on the closing of the last problem-lesson competition for the past period: Gene Verge secured first mention, while D. R. Wilkinson, Saul Brown and Roy Parkes each secured mentions. The membership has steadily increased and now numbers eighteen. The character of the problems studied and the results obtained are most gratifying to the directing body and are fast approaching a standard that is destined to place this atelier in the front rank among similar institutions anywhere. The directorate is composed of the following men, who stand as accepted leaders in their profession: D. C. Allison, J. C. Curtis and John T. Vawter.

Engineers Abhor Removal of Mr. Nishkian

The following letter, addressed to the San Francisco Board of Public Works, is self-explanatory:

Gentlemen: Referring to the recent removal of Mr. Leon H. Nishkian from the Department of Building Permits: The subject was discussed at length at the last meeting of the San Francisco Association of Members of the American Society of Civil Engineers and the following resolution was unanimously adopted:

"Resolved, That the San Francisco Association of Members of the American Society of Civil Engineers expresses its confidence in the impartial, trustworthy, fearless and competent way and manner in which Mr. Leon H. Nishkian has conducted the work in his office as structural engineer to the Building Permit Department, and our regrets as to the removal from his position."

As chairman of a committee appointed for the purpose, I am transmitting to you thia resolution.

Very truly yours,
H. J. BRUNNIER.

Committee:
J. D. Galloway.
M. C. Couchot.
H. J. Brunnier.

Designing New Race Track

Messrs. MacDonald & Kahn, Rialto building, San Francisco, have been commissioned to prepare plans for a new race track to be built in northern San Mateo county, about twenty miles outside of San Francisco, for the California Speedway Association. The track will be for motor racing principally, and the project includes the construction of a clubhouse, grandstand, bleachers, fence, etc. The construction end will also be in the hands of MacDonald & Kahn. It is hoped to have the track completed in time for a Thanksgiving Day meet.

School Contract

The Alameda Board of Education has awarded the contract for the construction of the Porter school, Werner & Rogers, architects, to Harvey A. Klyce for $82,137. Contract for the steel has been awarded to the Schrader Iron Works for $11,800. Mr. Klyce will want sub-bids on various parts of the work. The Porter school is to have twenty rooms and an auditorium seating 1,200 pupils.

Another Big Theatre

Application was filed the past month at the office of the San Francisco Building Inspector for permission to construct a Class "A" theatre on the south side of Stevenson street east of Sixth, San Francisco, at a cost of $150,000. The architect is E. M. Frasier, formerly in the office of G. A. Applegarth, and whose present address is 1973 Geary street. The building will have a structural steel frame with concrete hollow tile and metal lath and plaster partitions. There will be a sprinkler system and heating plant.

Fine Residence for Pacific Grove

Miss Julia Morgan, Merchants Exchange building, San Francisco, is preparing plans for a $10,000 country house for a Chicago client to be erected at Pebble Beach on the Seventeen-Mile Drive, near Pacific Grove. House will be constructed of redwood shakes with shingle roof and hardwood floors.

Miss Morgan also has plans under way for two houses, frame and plaster construction, to cost $6,000 each, and to be erected in Marysville.

Contract for Church Building

George McCrea, First National Bank building, Oakland, has awarded a contract to Moore & Watson and work has been started on the construction of the All Souls Roman Catholic Church at South San Francisco. Cost, $22,500.

The same architect is completing plans for a two-story frame and plaster country residence at Santa Cruz for Mrs. A. H. Munsell of Boston. House will cost about $15,000.

Concrete Hotel

Messrs. Morgan, Walls & Morgan, 1136 Van Nuys building, Los Angeles, are preparing plans for an eleven-story and basement reinforced concrete hotel building to be erected at the northwest corner of Sixth street and Grand avenue for Frank Simpson, 1032 Ingraham street. The building will be 60x80 feet and will be the first unit of a structure which Mr. Simpson expects to build on the site, which is 80x120 feet. The building will contain 150 rooms with private baths; lobby and store rooms on the ground floor.

Architect to Build Market

Benjamin G. McDougall, Sheldon building, San Francisco, has prepared plans for a large one-story and basement Class "C" store and market building to be erected at the northwest corner of Eighth and Mission streets, San Francisco, for himself. Building will occupy a ground area 275 feet square, and will cost in the neighborhood of $85,000. The same architect is also interested in a theatre project for Third street, south of Market, plans for which are in course of preparation.

Resort Hotel

B. Cooper Corbett, 822 Union Oil building, Los Angeles, has prepared plans for a large frame hotel building at Waterman Springs, a mountain resort near San Bernardino, for the Waterman Springs Hotel. It will be a two-story structure, built in the shape of a letter "H," the central portion being 40x80 feet, and each of the wings 40x190 feet. It will contain parlors, lobby, dining room, kitchen, 100 bedrooms and 20 bathrooms.

San Mateo County Home

Plans have been completed by Henry Shermund, Mills building, San Francisco, for a country house to be erected at Atherton, San Mateo county, for Mrs. George Fife. The house will be one-story and basement and designed in the bungalow style. It will contain about twenty rooms, five baths, hardwood floors, shingle roof, hot water circulating system, cement and brick walks and porches, sunken gardens and garage.

Granted Certificates

Certificates to practice architecture recently have been granted by the State Board of Architecture for the Northern District to the following: Chas. K. Bonestell, Jr., San Francisco; Franklin T. Georgeson, Eureka; Stafford Jory, Berkeley; Warren P. Skillings, San Jose, and James Donnellan, Chicago, Ill.

Factory Buildings

John Schulz, consulting engineer, 305 Wright and Callender building, Los Angeles, has made plans for the new factory buildings to be erected on Santa Fe avenue, near Twenty-third street, for the Southern California Box Company. There will be an office building 36x36 feet, factory building 240x240 feet, and power plant 50x50 feet.

More Schools for Oakland

Plans are being formulated for raising funds for additional school buildings in Oakland to relieve the congestion. Two more high schools are badly needed, according to Superintendent A. C. Barker.

Death of Charles I. Havens

Another old-time San Francisco architect has been called by death. On April 28 Charles I. Havens, until six months ago senior member of the firm of Havens & Toepke, passed away at his Kenwood ranch, near Santa Rosa. While he had been ailing for some time, Mr. Havens had shown constant improvement since retiring from active business to his country estate and his death came as a shock to his family and friends. He was 67 years of age and a native of Long Island, N. Y. He was one of San Francisco's foremost architects in the early days and his prominence as a designer of buildings twenty-five years ago was destined to be repeated with the rebuilding of the stricken city after the memorable disaster of 1906. Among the buildings designed by Mr. Havens while associated with Mr. Toepke was the Liebes Flatiron building, the Wiley B. Allen, Maskey's and various less pretentious structures. The old Tanforan race track buildings in San Mateo county were designed by Mr. Havens. He served for twelve years as City Architect of San Francisco, designing many of the early school houses, some of which are still in use. Mr. Havens was a member of San Francisco Chapter, A. I. A., and the Union League Club. He is survived by a widow, a son, Charles I. Havens, Jr., and a daughter, Mrs. H. B. Titcomb of San Francisco.

Death of Well-Known Contractor

Mr. Walter M. Williams, a member of the firm of Williams Bros. and Henderson, one of the best-known contracting firms in San Francisco, died at Roosevelt Hospital, Berkeley, April 19.

The deceased journeyed to California from Milwaukee in 1884, and for the past twenty years was identified with the contracting business in the bay cities. Some of the more important contracts taken by the firm were the building of the Oakland Technical High School, the I. O. O. F. Home at Saratoga; the Hall of Records, Colusa; the Holbrook and Morshead buildings, in San Francisco, and the New City Hall at Richmond.

Mr. Williams was forty-four years of age, and a member of Standard Lodge, No. 440, F. and A. M., Athens Camp, No. 457, Woodmen of the World, and for many years was treasurer of the Oakland Lodge of United Workmen.

Cement Chemist to Build

Charles Peter Weeks of San Francisco has prepared plans for a $12,000 country home to be built at Napa for Mr. Myrvin Hollinger, chief chemist for a San Francisco cement company. The style of architecture will be Italian. There will be ten rooms.

Redwood City Jail.

In addition to the facts already published regarding the new county jail at Redwood City, for which bids will be opened June 5, the architect, W. H. Toepke of San Francisco, furnishes the following information: Entire work is being figured as a whole, with the exception of the jail work, and includes the following items: reinforced concrete walls and foundations, cement floors and yards, structural steel work, sheet metal, mill work, carpenter work, lathing, plastering, glazing, metal staircases, terra cotta, sandstone and granite work, dampproofing, plumbing, gas fitting and electric wiring, painting, steam heating, oil-burning equipment, storage tank and roofing. A separate proposal is required for the cell work, which will include locking devices, plate work, metal window guards and doors, staircases, metal frames, gratings, bunks, etc.

New Buildings for Palo Alto

Congress has been asked to appropriate $50,000 for a new postoffice building at Palo Alto. The matter has the endorsement of Congressman Hayes of San Jose and Senator Phelan.

The Bank of Palo Alto has announced its intention of erecting a two-story steel and brick bank building at the corner of University avenue and the Circle.

A fifty-room commercial and tourist hotel, with stores on the ground floor, will be erected on University avenue by Joseph Larkin.

The Palo Alto Women's Club will build a new club house from plans by Messrs. Hodges & Mitchell of San Francisco.

San Mateo Store Building

Morris M. Bruce, who succeeded to the work of Albert Pissis, has prepared plans for a one-story Class "C" department store building to be erected in San Mateo for the Parrott Estate. The building will be 110x150 feet and will represent an expenditure of $40,000.

Contract for Two San Leandro Schools

For the second time bids were received for the construction of two grammar school buildings at San Leandro from plans by J. J. Donovan of Oakland. The low bid was submitted by McLaren & Peterson of San Francisco and a contract was awarded to this firm for $77,880.

Contract for Palo Alto Residence

John K. Branner, 519 California street, San Francisco, reports that contracts amounting to $10,289 have been let for the construction of a new residence for Mrs. Hughes and Mrs. Kennedy on University avenue, Palo Alto.

Will Build Many Homes

W. A. Rudgear, a well-known San Francisco manufacturer, recently purchased a section of Claremont Court, near the westerly portal of Twin Peaks Tunnel, San Francisco, with the idea of building homes on the property to be placed on the market on the easy payment plan. The houses will range in cost from $4,000 to $10,000 each.

Y. W. C. A. Building

San Francisco is to have a new building for its Young Women's Christian Association, something over a quarter of a million dollars having been subscribed during the past month. It is understood the plans for the building will be prepared by Miss Julia Morgan, who designed the Oakland Y. W. C. A. and the San Jose Y. W. C. A. buildings.

Oakland Store Building

Walter D. Reed, the Oakland architect, has completed plans for a one-story and basement Class "C" store building to be erected at the gore of Webster and Fourteenth streets, Oakland, for Walter Arnstein. There will be five stores, which have already been leased for automobile salesrooms. Construction will be of steel and brick, with white cement exterior. Estimated cost, $25,000.

Apartment House

Plans have been completed by H. C. Bauman, Hearst building, San Francisco, for a three-story and basement frame and plaster apartment house to be erected on College avenue, near Ocean View drive, Berkeley, for R. A. Jensen. The estimated cost is $25,000.

Mr. Parkinson Designed Bank Building

Editor The Architect and Engineer of California:

I notice in your issue for this month that you published the Union Trust building (now the Hibernian building), Los Angeles, Parkinson & Bergstrom, architects. This is an error, as I designed this building long before Mr. Bergstrom's association with me, and he had nothing whatever to do with it. Please correct the notice.

Yours very truly, J. PARKINSON.

San Francisco Sea Wall Settles

The State Engineering Department in charge of the improvements on the San Francisco water front recently had its first unpleasant experience with the new sea wall lately completed along the Embarcadero. Without much warning Pier 20 was thrown out of plumb by the settlement of some rock fill and piles upon which the wharf was built.

Speaking of the movement of the sea wall, Assistant State Engineer Newman said:

"We anticipated the subsidence and provided for it by making the deck of the bulkhead flexible. The method of repair will be to jack up the deck, build additional supports on top of the piles as they now stand, and tie the front of Pier 20 back in place."

The sea wall at the foot of Folsom street is a rock fill, placed in a dredged excavation in the mud, and pierced with concrete piles seventy and eighty feet in length, the piles being driven through the rock and for twenty or thirty feet into the mud. On these piles the bulkhead wharf was built. Engineers have pronounced the type of construction practical.

Personal

Irving F. Morrow and William I. Garren announce that they have entered into partnership and will practice architecture under the name of Morrow & Garren, architects, room 1604, Chronicle building, San Francisco.

Architect Frederick H. Eley of Santa Ana addressed the Monday Club of that city recently on "Architecture." Mr. Eley defined the causes of the growth of the profession and its relation to public welfare and discussed the difference between good and bad architecture.

H. Merrill Bowser of Exeter has formed an association with Messrs. Glass & Butner, architects of Fresno. A branch office will be opened at Hanford in charge of Mr. Bowser.

Bungalow for Piedmont

Edward W. Cannon, architect, of Oakland, has prepared plans for a one-story bungalow to be erected in Piedmont for Frederic Apps. The house and garage will cost $6,500.

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The Illumination of Oakland's Municipal Auditorium*

By ROMAINE W. MYERS

OAKLAND'S municipal auditorium in the central part of the city, faces Lake Merritt, with the Coast Range in the distance. It stands with wide open stretches on every side and a better site could not have been selected, both from the standpoint of beauty and that of utility. The building cost, exclusive of the grounds, $1,000,000. It is of reinforced concrete.

The main facade on the north side facing the lake is faced with granite with seven niches, each decorated with bas reliefs. It has a length of 400 feet and a width of 200 feet. There are three stories and a basement.

The interior of the building, on the first floor, is divided into an arena and a theatre, these having a total seating capacity of about 12,000. The arena is separated from the theatre by a stage, which can be thrown open so as to be used in common by both, or divided by a steel asbestos curtain, thus making it into two stages for use with either arena or theatre section. The arena has a clear floor space of 214 by 117 feet and a seating capacity including balcony of nearly 10,000 people.

The theatre section has a seating capacity of 2,000 and was especially designed for grand opera, theatrical productions, etc. The theatre has an orchestra pit for 100 musicians and dressing rooms for the accommodation of 200 people. There are separate entrances and ticket offices for both theatre section and arena.

The arena and theatre balconies are reached by wide inclines rising by easy stages. The main corridor extends the full length of the building, from which corridor the exits in the niches open. Between recesses of these niches are spaces utilized for exhibition booths.

In addition to the main arena and theatre section there are several rooms for smaller gatherings: committee rooms, a ball room and an art gallery. The basement space is used for storage rooms, heating and ventilating apparatus, electric lighting and power switchboards, machinery, and the balance is for use in conjunction with the arena for live stock, horses and kennel clubs and sportsmen's shows in general.

Electrical Equipment

The electric light and power service enters the building underground in 3-inch conduits. This consists of two 3-phase 4,400-volt lead-covered cables, one connected to the Pacific Gas and Electric Company's hydro-electric system and the other to the steam system. This is done to insure continuity of service in case of the failure of one. There is also a 500-volt direct-current service for elevators. There are few elevators in the building, as most of the floors are reached by inclines. The unusual engineering point of the service conduits is the fact that they were placed in "made" ground, the lengths being staggered and bound together by steel straps, thus making a continuous steel construction.

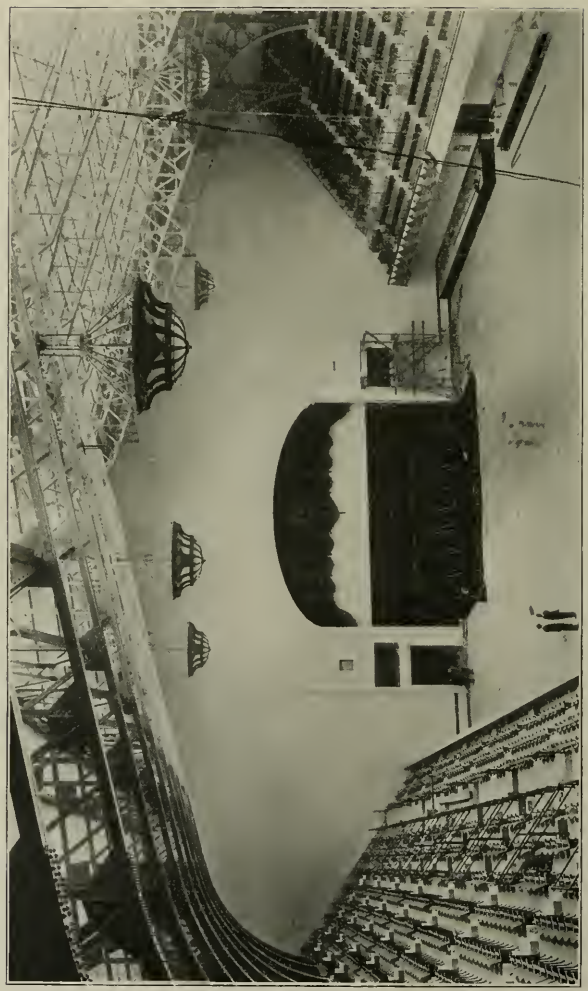
The service cables enter a fireproof service or transformer room, the alternating current services terminating in 13,000-volt oil switches equipped with the usual relays. These switches were installed for this high voltage so as to take care of the possible change in primary voltage to 11,000. From the oil switches the current is transmitted on insulators supported on an angle iron rack to the transformers, there being ten, having a capacity of 330 kilowatts. This is enough for all ordinary purposes, but is considerably less than the capacity of feeder cables in switchboards which are installed for a total capacity of over 700 kilowatts. Provision has been made for setting more transformers in parallel when the occasion demands it. There are also two 3-inch spare conduits from the transformer room to the main switchboard for additional cables that may be required.

In the service room are the electric meters for the entire building. These are on a separate switchboard upon which are also located automatic control switches and relays for the emergency lighting such as exits and corridors. These automatically throw the current on to another service in case of the failure of one.

From the transformers in the service room all the current, except that used for emergency lighting, is transmitted by sixteen 500,000 c.m. and five 300,000 c.m. cables to the main switchboard. This switchboard is in a concrete room under the stage.

The main switchboard consists of nine panels of marine finished slate upon which are mounted switches and circuit

**Details are here given regarding the electrical equipment and illumination of a large public building. The author is a consulting engineer of Oakland, California, who designed and supervised the electrical installation. Acknowledgment is due the Journal of Electricity, Power and Gas for permission to reprint this article and use of the accompanying illustrations.*



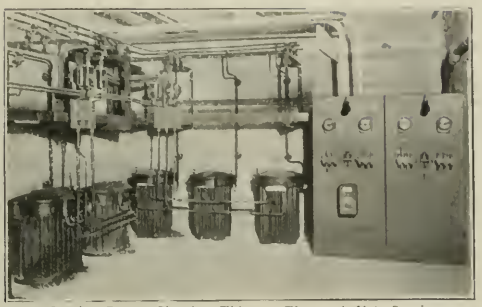
Interior Oakland Auditorium, Showing Suspension of Semi-Indirect Fixtures

breakers for transmitting 500-volt direct-current to elevators, 3-phase a.c., 220-volt for motors and 220-110-volt single-phase a.c. for lighting to the stage switchboards and various panels in the building.

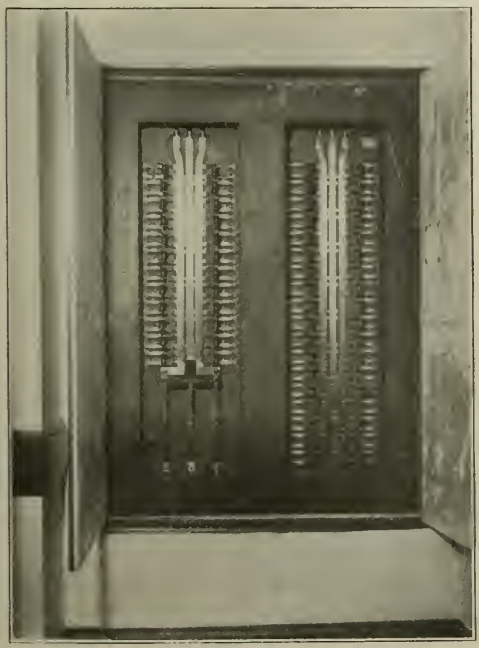
These panels, exclusive of the arena and stage switchboards, number twenty-two, with 436 circuits.

Direct current for stage, moving pictures or searchlights is supplied by a 30-kilowatt 125-volt General Electric motor generator set in the main switchboard room. Also in this room is the arena floor switchboard. This board has a capacity of 500 kilowatts, which is divided into 3-phase 220-volt, single-phase 220-110-volt three-wire and 125-volt direct-current panels for supplying light and power to the arena floor.

There are twenty large junction boxes 18 inches in diameter and 8 inches deep set in the arena floor at various intervals. These junction boxes are connected together both longitudinally and transversely by means of a mass of 2-inch conduits to a large can in the rear of the arena switchboard. These conduits have no wire pulled in, the object being to provide a raceway to various points on the floor so that in case of an electrical or machinery show it would be easy to pull in cable and connect to any current desired. Alongside of these junction boxes are also placed small junction boxes for telephone and signal purposes. These are also connected together in a similar manner. A trap in the hardwood floor successfully conceals the junction boxes from view.



Service Room, Showing Thirteen Thousand Volt Service Switchboard and Transformers



Typical Panel Board

The center of the arena floor is provided with four No. 0 cables for moving picture machines. There also are twenty-two receptacles under the gallery rail and fifty-five receptacles on the main roof trusses—all of these on separate circuits—for decorative or other uses.

The arena stage switchboard and the theatre stage switchboard are on the same side of the stage directly over the main switchboard in the basement. This was economy from the electrical point of view, as it saved considerable copper.

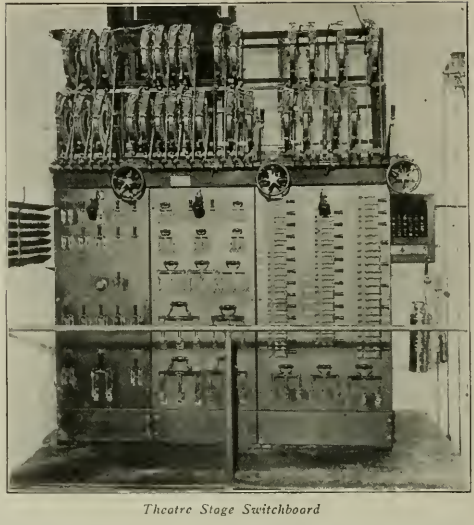
The stage switchboards are similar, both being provided with grand

master, stage and house light master, red, white and blue master and direct current master switches.

All fuses are on the rear of the boards and easily accessible. The border and pockets for theatres and arena are interchangeable, being connected by double throw switches.

In providing the light for the stage, it is necessary to take into consideration the fact that for persons in the rear of the balcony of the arena, being at a distance of over 250 feet, the amount of light used would be necessarily more than the ordinary theatre stage. With this idea in view, there were five borders installed, each border having reds, whites and blues consisting of three hundred and twelve 40-watt lamps; the foots having two hundred and eighty-eight 40-watt lamps. The combined capacity of pockets on stage is over 2,500 amperes. The borders, foots, strips and pockets are equipped with a full set of Cutler-Hammer dimmers. Monogram act announcers are installed for each stage.

The stage manager has been provided with signals and telephones to various parts of the house and dressing rooms. The wall phones are Holtzer-Cabot and of a durable type, being fool-proof and thief-proof, which is a desirable feature in a building of this character.



Theatre Stage Switchboard

The arena, including the balconies, has an area of 46,000 square feet. This is illuminated by a set of the largest semi-indirect fixtures ever built and placed in one room. These fixtures are 10 feet in diameter, weigh over 3,800 pounds each and are suspended about 60 feet from the floor. Type "C" lamps consuming 44 kilowatts are used in the eight fixtures. It was necessary to provide a reflecting and diffusing ceiling for each fixture, as the clear glass ceiling of the arena could not be used for this purpose.

Motor Generator Set, Main Switchboard Room

The average illumination upon a reading plane of the arena floor is 3.2 foot candles. The diffusion of light in this room is particularly pleasing. In a recent athletic tournament in which there were more than 2,000 participants, an indoor baseball game, a basket ball game and a 200-yard relay race were held simultaneously. These games were all played with apparently the same ease, as far as seeing is concerned, as in the daylight.

The theatre is illuminated by a center skylight, behind which are placed type "C" lamps and special mirrored re-

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flectors. The ceiling decorations are brought out by means of lamps placed in a cove, some of the lamps being installed in a Mohrlite trough and others in parabolic reflectors.

The theatre has two moving picture rooms, one in the first and one in the second gallery. These are equipped with two Powers Cameragraph No. 6A moving picture machines with stereopticon attachments. Each room has three 100-ampere and two 50-ampere receptacles, also 10-ampere receptacles for motors for machines and rewind apparatus.

Night Picture of Diffusing Sash in Theatre

The main corridor on the north side of theatre and arena is illuminated by 400-watt Mohrlite semi-indirect units, which give an average illumination on the reading plane of 4.7 foot candles. In the exhibition booths of this corridor there are also circuits feeding twelve 50-ampere and twelve 10-ampere receptacles, thus making provision for the display of electric heating, small motors or other electric apparatus at these places. The main and second floor lobby of the theatre is illuminated by 200- and 150-watt Parian glass semi-direct fixtures. The illumination averages 2.6 and 2.5 foot candles respectively.

All inclines are illuminated by shallow Alba bowls 2½ inches by 10 and 12 inches set in cast bronze ceiling flanges. It was necessary to provide a fixture for a minimum length due to the low ceiling height of the inclines.

On the first floor are also shower rooms, ladies' rest rooms, a press room with telephone and telegraph connection facilities for large conventions, also a kitchen, which is provided with electric current for electric cooking on a large scale.

On the second floor are committee rooms, smokers and ladies' dressing rooms and smaller assembly rooms, the assembly rooms being equipped with facilities for moving pictures.

On the third floor is the art gallery and ball room. The art gallery is a room 36 by 110 feet and is illuminated by Holophane reflectors above a skylight. Provision is made along the picture moulding for a large number of receptacles. These are for the individual lighting of pictures. The ball room is finished in a French gray tone and has a seating capacity of over 600 persons. One of the features of the room is a balcony overlooking the dancing floor. It is also equipped with a stage complete with curtain, border and footlights and dressing rooms adjoining the stage. It has a kitchen, which is fully equipped with a large General Electric Company electric range. The room is illuminated by Holophane reflectors placed above moss amber glass. This glass is noticeably free from spots, producing an excellent diffusion of light throughout the room. This is noticeable from the night photograph shown in this article. The illumination

Night Picture of Main Corridor

on the reading plane averages 2.7 foot candles. The ball room opens out into an open air promenade and roof garden, which runs the entire length of the auditorium and overlooks the lake and surrounding hills. In the center of this promenade there are two 100-ampere receptacles fed by No. 4/0 cables from the motor generator set in the main switchboard room. This current is for the purpose of searchlights or any other spectacular lighting effects that might be produced on the roof. For instance, they were used to furnish current for six 500-watt General Electric flood lighting projectors thrown on a pennant sixty feet long bearing the words "Ad Masque February 14th." This pennant was suspended from a steel cable 300 feet long between the flag poles on the roof of the building.

Art Gallery, Showing Diffusing Sash

The architect of the building was John J. Donovan, the consulting architect being Henry Hornbostle, and the electrical contractors NePage-McKenny Company.

The Need of Good Shop Light

ONE of the largest insurance companies recently made an investigation of 91,000 accident reports and discovered that 10 per cent of the accidents were directly caused by the lack of proper light, and in 13.8 per cent of the accidents poor lighting was a contributory cause. The statistics of accidents in the United States reveal the fact that about double the number of accidents happen during the four winter months when the days are short as compared with the four summer months when the days are long.

Efficient shop lighting is now considered by progressive manufacturers as an indispensable part of an efficient shop equipment. Investigations by reliable authorities of large numbers of plants have demonstrated that efficient artificial lighting will increase the total output of plants such as steel mills, 2 per cent, and textile and shoe factories, 10 per cent. The cost of efficient shop lighting is from one-tenth to one-half of one per cent of the wages. For instance, if a man earns $3 a day it would cost about a cent and a half to furnish him with adequate light.

The orders of the Wisconsin Industrial Commission require that for ordinary departments where there is no smoke or gas, there should be provided one-fourth candle power per square floor foot. That is, a 100 candle power lamp hung ten feet from the floor will illuminate 400 square feet of space. For foundries one-half candle power is required per square floor foot. On machines where fine work is being done sufficient light is required to avoid eyestrain.

C. W. Price, assistant to the Wisconsin Industrial Commission, recently recommended the tungsten lamp as the best type of lamp for all shop conditions. He was particular to state that tungsten is not a trade name and these lamps are not monopolized by one company but are manufactured by a number of companies. The light from the tungsten lamp is almost the same color as sunlight, and is very cheerful and pleasant in its effect. The modern tungsten lamps are very durable; the life ranging from 1,000 to 2,000 hours.

The tungsten lamp consumes only one-third to one-fourth as much current as the old type of carbon filament lamp which is so commonly used in factories. In the average factory the old type of lamps can be replaced with new lamps and the light can be increased three or four times, with no additional cost for current.

Mr. Price recommended the shallow bowl reflector as the best design for efficiency. These reflectors should be made of white porcelain enameled steel. This material is very durable and strong and is easily cleaned. A properly designed reflector adds from 35 to 50 per

cent to the efficiency of the lamp. This is an exceedingly important point for every manufacturer to bear in mind. This type of reflector does not waste the light upon the ceilings and the upper walls, but concentrates it upon the working plan where it is needed.

Mr. Price emphasized the importance of keeping the reflectors clean, saying that a clean reflector is 25 to 50 per cent more efficient than a dirty reflector.

The tungsten lamp should be so attached to the reflector that the center of the filament is on the same plane with the center of the reflecting surface of the bowl. Mr. Price stated that in the average factory department where the 100-watt tungsten lamp is used the cost is about $5 per unit. This includes lamp, reflector, material and labor. The larger units used in foundries cost about $25 per unit, including material and labor.

Mr. Price gave the following standards of reflectors and lamps for various conditions in factories: In rooms with ceiling 11 feet to 16 feet in height (and these include probably 90 per cent of the factory rooms in Wisconsin) he recommended the 100-watt tungsten lamp with a 14- or 16-inch white porcelain enameled steel shallow bowl reflector. These should be hung 10 feet from the floor and at 20 foot centers. He emphasized the importance of not necessarily arranging these lamps uniformly over the room, but arranging them with regard to the machines in the room. He stated that in all industries such as woodworking and paper industries where the work is not fine work, individual machine lighting can be done away with if the above type of lamp and reflector are located over the individual machines as far as it is possible.

In rooms, such as warehouse rooms, where the ceilings are 9 to 11 feet in height, the 60-watt lamp should be used with 12-inch shallow bowl reflector.

In foundries the following lamps were recommended: Under 20 feet from the floor, 200 watt; 20 to 25 feet from the floor, 300 watt; 25 to 30 feet from the floor, 400 watt; 30 to 35 feet from the floor, 500 watt; 35 to 40 feet from the floor, 750 watt; over 40 feet from the floor, 1,000 watt.

A deep bowl reflector, 27 inches, was recommended for 750- and 1,000-watt lamps. A 15-inch deep bowl reflector was recommended for the 300 and 400 and 500 watt lamps in foundries where the width of the foundry is less than 2½ times the height. In wider foundries the shallow bowl reflectors were recommended on the above lamps. In all foundries where the 200-watt lamps are required the shallow bowl reflector is recommended.

Stairways should be lighted with 40-watt lamps hung as high as possible at the head of the stairway. A 10-inch bowl or cone reflector is recommended. For yards a 300-watt tungsten lamp with a 16-inch flat disc reflector is recommended. These should be hung 20 feet from the ground and from 200 to 300 feet apart.

For all individual machine lighting Mr. Price recommended 25-watt lamps. It has been found advantageous in many cases, he said, to attach these lamps to brackets or fixtures which will hold the lamp in place. These fixtures should be so constructed as to make it possible to adjust the lamp. The reflector should be so attached as to completely hide the lamp from the eyes of the operator. Individual lights should be provided for all machines on which fine work is done and sufficient light should be furnished to avoid eyestrain.

A 25-watt lamp with a 10-inch reflector was recommended for benches. These lamps should be hung 18 inches above the bench and about 18 inches in front of the bench. Where the work on benches is not fine work, the lamps for general illumination will give sufficient light.

For drafting tables a 40-watt lamp with a 10-inch cone reflector or a 12-inch bowl reflector was recommended. These lamps should be hung about 3½ feet above the center of the table.

Mr. Price stated that where rooms are properly whitewashed it adds at least 20 per cent to the efficiency of the natural

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and artificial light. The windows in the factory should be cleaned regularly. This increases the efficiency of the daylight very much.—Improvement Bulletin.

Lighting the Panama Canal

The United States is largely indebted to the efforts of Swedish engineers for an economical means of lighting the Panama Canal. In Sweden the reefs and narrow inlets are a menace to skippers and fishermen, but the expense of engaging lighthouse keepers and providing them with the means of livelihood would be so great that many dangerous points had necessarily to be left unguarded. That resulted in Gustaf Dalen creating the self-tending lamp, which affords a practical and economical means of light. From that was finally evolved the Aga gas accumulator, which contains 100 times its own volume of gas, and is, at the same time, safe and non-explosive. It can be fixed to burn for a year or even a longer time without personal attention. The Aga flashlight apparatus also makes it possible to give distinctive characteristics to lights, of any desired duration or combination, while another marvel of this economical device is the sunvalve, which extinguishes the light during the day, thus further diminishing gas consumption. It is that type of lamp that has been installed along the Panama Canal.

Yosemite Valley Improvements

Construction work is now well advanced on the improvements in the Yosemite Valley by the Desmond Park Service Company.

The site for the new hotel, to supplant the historical Sentinel, will be in the meadows back of the Sentinel, so located as to give a commanding view of the principal falls, half dome, Glacier Point, and other major attractions of the scenic park.

The $40,000 Glacier Point hotel will be built on a lofty site near the old structure, but located so as to give a better view of the marvels in the valley below. Features will be a sunrise balcony, at the east, and a sunset balcony at the west, both of which will be commodious in size.

Chalets costing $12,000 each are being built at Tenaya Lake, Lake Merced and Tuolumne Soda Springs. Plans for these buildings were prepared by Edward J. Symmes.

LOOK through the advertising pages each month. Make it a point to send for some of the printed matter offered by manufacturers and building material houses. And when you are writing or phoning for a contractor or material man to call and figure tell him you saw his card in The Architect and Engineer.

Lighting the Liberty Bell.

When the Liberty Bell was being brought back from the Panama-Pacific International Exposition, arrangement was made for a short stop over at Schenectady, N. Y.

In order to allow as much time as possible for the people to see this historic relic, all of the lighting arrangements were made beforehand. The car was shifted into the freight yard, about 700 feet from the street. It was therefore necessary to furnish some additional general illumination, as well as that upon the bell, so that it would stand out strongly and be seen from a distance. This was done by mounting two G. E. flood lighting projectors on a box car opposite the place where it had been prearranged to have the Liberty Bell car placed. This box car was about 40 feet from the bell. One flood lighting projector was used to throw the light on the bell, while the other was used for general illumination purposes. About 400 feet from the bell, in an oblique position, another flood lighting projector was placed on a box car in order to furnish general illumination about the car and the street.—Lighting Journal.

Ugly Electrical Signs

The New York Sun is not pleased with the daylight appearance of the ugly framework of the electrical signs that are a feature of that city's night life.

"New York's justly praised electrical display at night," says the Sun, "is not gained without cost to the city's beauty at other times. The stretch of city blocks that shines so brilliantly at night is a sorry skeleton in the daytime with its gaunt iron structures shooting up meaninglessly from the roof tops."

Electric Heating of Office Buildings

Electric heating of office buildings has been successfully accomplished by the Washington Water Power Company in the case of its four-story building in Spokane during the past three years. Cartridge heating units are employed in a special boiler supplying steam and ordinary steam radiators. A large substation building is to be similarly heated, using the existing plant with the substitution of electric heaters for coal fuel, the hot air being circulated through the boiler tubes by means of an electric fan. No determination of rates for commercial service has yet been made.

Recognition

Messrs. Francis Pierpont and Walter S. Davis of Los Angeles have received a request from the Art Institute of Chicago stating that the officials of the Institute were so impressed with the four attractive perspectives of residences which had been exhibited at the recent architectural exhibition in Chicago that they desired to purchase the drawings and install them in their architectural department.

Dry Dock Bids

President J. A. McGregor of the Union Iron Works received eight bids for the construction of the company's new dry dock at Hunter's Point. McGregor has gone East to confer with Charles Schwab relative to the awarding of the contract. Howard C. Holmes is the engineer. The contract has been let to the San Francisco Bridge Company for approximately $600,000.

More Swimming Pools

Lodi has voted for the building of a municipal swimming pool, Riverbank is building a swimming pool, Tulare is preparing to build a pool 40x80, the Madera City Council has already provided for a swimming pool to cost $10,500, and even Merced is preparing to build an outdoor plunge.

Many Dwellings for Vallejo

It is announced that the Hoyt Construction Co. of Oakland has secured a block of land in Florida street, Vallejo, and will erect a number of dwelling houses for the mechanics who are to be employed on the battleship "California," which is to be constructed at Mare Island.

English House for Northbrae

Messrs. Wood & Simpson have completed plans for the construction of an English house of brick veneer, half timber and plaster with shingle roof, for a client at Northbrae. It will cost in the neighborhood of $10,000.

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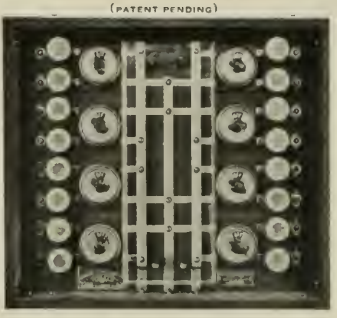

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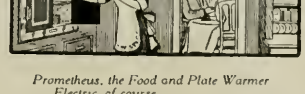

Prometheus, the Food and Plate Warmer Electric, of course

"Resource" — How convenient at the moment of delay to be able to conserve those qualities of the meal or luncheon which make for their success. Recourse to the Prometheus Food and Plate Warmer has helped many a hostess maintain her poise and good nature when belated guests "keep things waiting" or unlooked-for-friends drop in. It's a necessary "part of the house." Let us tell you why.

M. E. HAMMOND, Pacific Coast Representative
217 Humboldt Bank Building, San Francisco.

The **Prometheus Electric Company**

The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Why Be a Contractor?

One of the well-known manufacturers of steam shovels received an inquiry from a man in northern Wisconsin, who said he was thinking of doing a grading job and wanted to know the price of a good steam shovel. It seemed genuine so a salesman was dispatched at once to negotiate a sale. He located his prospect in a saloon. The prospect was exceedingly seedy in appearance, but you can't always tell how many big bills a bum looking wallet may contain, so the salesman went blithely at his task, showing handsome photos of steam shovels of all types and sizes. After about half an hour of picture gazing, the prospect said:

"What might be the price of this here machine?"

"Well, I can put that shovel down here for $7,875, freight paid."

"Give me something a little nearer the earth," drawled the prospect, "I ain't been up in a Zeppelin lately."

"Well, how does this one strike you? Here's one we call the Bantam, half yard bucket, handles 600 yards a day easily."

"That looks good; what's the price?"

"I could give you that dandy little digger for $3,850."

"Gee whiz, Mister, get down here among the dirt movers. I don't want no cloud catcher, just a plain dirt digger."

"My friend, I see that what you want is not a regular steam shovel; you want one of these small power scrapers with a derrick and engine. Now I can furnish this little peach for just $1,550."

"Is that the cheapest digger you folks handle?"

"It is."

"Well, I'll be blamed! Do you think I'd go into the contracting business if I had as much as $1,550? Not if I know myself and I think I do."—Engineering and Contracting.

Mistakes in Bids

When a contractor makes a mistake in his bid it usually loses him the job. At a recent bridge letting, however, the opposite occurred.

On the total, a competitor appeared to be the winner. But in checking the bids the officials found that the next low man had made errors both in multiplication and in addition. When the corrections were made, the standings of the two low bidders were reversed.

Wanted—Carpenter Bandman

Wanted—A musical carpenter; not one who can draw a dirge out of a knot with a ripsaw or beat the tom-toms with a hammer or shave off a few grace notes with a plane.

The government wants a carpenter who is qualified to serve as a band leader. He's expected to "double in brass."

If he succeeds in passing the civil service examination, he may pack his tools and instruments, roll up his sheet music and blue-prints and hie him to the western Navajo agency in Arizona and regale the red man at $900 a year.

Why does the government want a carpenter to lead its band? It doesn't say, but—

If he's worked for a contractor, he ought to be familiar with flats.

He may have handled basswood.

He ought to know what's the matter with the acoustic properties.

His trisquare might serve as a triangle.

He'd be a handy man to have around when the wooden instruments needed repairing.

The band leader may be expected to turn his own baton on a lathe. The examination is to be given by the secretary of the Civil Service Commission in the postoffice building, March 7. All applicants must show they have served an apprenticeship in carpentry and led a band for at least one year. Their ages can range for nearly four octaves—from 20 to 50.—Minneapolis Journal.

Quantity Surveying in Our Midst

Minneapolis Improvement Bulletin.

There is now at least one quantity surveyor in these two cities. To be more accurate geographically, he is in St. Paul. He is an architect who has devoted a good deal of time to engineering. He did not intend to take up quantity surveying when he opened his office as an architect, not long ago, but he finds himself rather suddenly thus engaged with a good deal of work ahead. It happened that he had been in charge of the architectural department of a railroad system and during a term of years had become familiar with all details of all its various kinds of structures. A contract for a set of buildings for a railroad, including a round-house, was to be let. A contractor after trying to make up his bid went to

him for help. He furnished quantities and estimates. Other work followed. Inquiries and commissions are coming to him from out of town.

This experience indicates that there is a field here for quantity surveying. Contractors who have an opportunity to bid on special railroad buildings and on special structures for industries may find the specialist, or experienced quantity surveyor, a handy and profitable aid.

Troubles of Contractors

Contractors are having more trouble than usual these days. Many jobs have been delayed because it has been impossible to get prompt deliveries of machinery and materials. One contractor has discovered that things which before the war could have been delivered within two weeks now cannot be obtained in that number of months. This contractor ordered a crank shaft for an engine and was informed that the company could not accommodate him; he would have to get a new engine. He bought a new machine that formerly sold for $2,300 and found that the present price was $3,500. When he began organizing his forces he discovered that there was no idle labor. All the Italians and Austrians and Greeks had either gone to Europe or were working for someone else.

A Shame to Take the Money

An efficiency expert has discovered that none of us work as much as we think we do. According to his calculations, we really work only one day in a year. After perusing his table of facts and figures, you perhaps will agree that any and all of us do wrong to take the pay envelope, big or little as it may be:

One year—365 days, less one-third of the time, 122 days, sleeping, 243 days left; less another third, 122 days, traveling, recreation, etc. 121 days left; less 52 Sundays, 69 days left; less 12 holidays, 31 days left; less lunch time (one hour per day), 15 days, 16 days left; less two weeks' vacation, 14 days, 2 days left; if you keep Yom Kippur, one day left—the one day you work.

Red Cedar Chests Keep Out the Moths

With the opening of spring the innocent appearing little moths start their depredations. Why not forestall them and avoid this unnecessary damage? A Tennessee red cedar chest or a closet lined with this wood will effectively prevent their ravages, and the pungent aroma of the wood gives a most pleasant and cleanly air wherever used.

The cedar chests on sale in the furniture stores are priced at from $20 to $50 apiece. These chests can be made at home or by any local carpenter at a fraction of this expense. Anyone handy with tools will find making a chest a most pleasant and profitable exercise, and one which has become quite popular.

Millmen can do a good business by making aromatic cedar chests for the furniture stores. The freight on a finished chest is so much more than on the rough lumber that these articles can be made here to greater advantage than by shipping them out from the East.

White Brothers, the largest hardwood dealers on the Pacific Coast, have just taken in a fine new stock of Tennessee red cedar, 1 inch in thickness, widths 3 inches to 6 inches, and lengths 4 to 10 feet. The grade is sound knotty and the sizes are just what is required for making chests and lining closets. The knots and sap, far from detracting, give the finished article a strikingly beautiful effect.

A cedar chest or cedar lined closet will bring joy to the heart of wife, mother, sister or sweetheart, especially at this season of the year, because she can lay away her winter furs and heavy cloaks in perfect safety, knowing that when the cold weather comes around again she can take them out sweet and fresh and with no signs of visitations from her usual enemy, the moth.

San Jose School Improvements

The city of San Jose has voted in favor of a $100,000 bond issue, the money to be expended in the construction of a $50,000 addition to the High school, a new grammar school building, and additions and repairs to several of the present school buildings.

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CABINET or HARDWOODS?

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Building and Industrial Notes

Important Machinery Catalog Issued in Sections

The Meese & Gottfried Company of San Francisco and Los Angeles has adopted the sectional form in issuing its new general catalog, and section I of the ninth edition catalog has just been received. This first section is one of the handsomest publications of its kind we have ever seen. It treats of a portion only of the firm's line of conveying, elevating, screening and mechanical power transmitting machinery: that is, pulleys, couplings, shafting, etc., but is full of important data, making it of permanent value to the engineer or plant superintendent. Of special interest is the descriptive matter it contains on "shortcenter" belt drives, a departure from the usual methods of belt driving which makes it possible to install belt drives under conditions where heretofore high speed chains alone were considered practicable.

The catalog is one that should prove very useful to those interested in power transmitting machinery. It is splendidly gotten up and filled with much valuable data, together with numerous high-class half-tone illustrations.

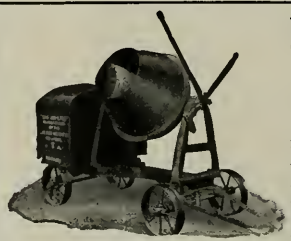
In New Quarters

Celebrating their twenty-first anniversary, the Curtis-Newhall Advertising Company moved last month to commodious new quarters in the Mortgage Guarantee building on Spring street, Los Angeles.

The Curtis-Newhall Company was established in Los Angeles in 1895 by W. D. Curtis and Henry W. Newhall, the former being still its president. Mr. Newhall is now publisher of a magazine in Boston. Some five years ago H. W. L. Gardiner, who has been actively engaged in business on the coast for twenty years, became interested in the company and at the present time is its vice-president.

Hoosier Cabinet Removal

Finding that its greatly increased Pacific Coast business required larger headquarters, the Hoosier Cabinet Co. has removed to No. 1067 Market street, San Francisco, where it will occupy for offices and display room the entire ground floor. It extends a cordial invitation to architects and contractors to visit it and inspect the improvements in its Hoosier Cabinets, especially in the types adopted for apartment house installation.



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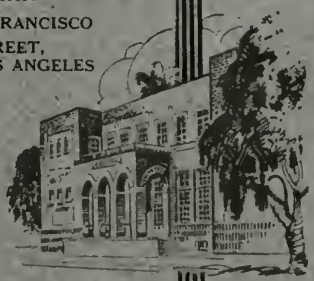

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He believes that you have a particular knowledge of all the parts of a modern home — together with a knowledge of drafting, construction, planning and designing. He believes that you are capable of correlating the parts and working them together in a successful modern home.

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857 Folsom Street

The Fine Art of Enameling

AN interesting book which deals with the art of enameling has recently been published by the Kohler Company, of Kohler, Wis. Few people have any idea of the process of enameling the iron castings of bath tubs, lavatories and sinks, and fewer still know anything about the history of enameling.

This interesting book, entitled "Kohler of Kohler," traces briefly and entertainingly the progress of enameling from the time of the early Phoenicians down to the present perfected method employed in the great Kohler plant. The book is profusely illustrated, the color plates showing the construction of a bath tub from the time the pig iron is lifted by the electric magnet, through the various stages of its completion until it is ready for shipment.

To any one who has never been in such a factory as that of the Kohler Co. the description and illustrations of the casting, enameling, etc., will be most interesting. Those, too, who are informed concerning the art of enameling will find the book well worthy of perusal.

In addition to the interesting story of the development of enameling the book contains a comprehensive catalog of Kohler products. It is sent free to those who write for it.

Will Represent Sloan Valve Co.

The Pacific Coast plumbing trade will be interested in the announcement that Mr. T. R. Burke, formerly with the N. O. Nelson Company, has been appointed Pacific Coast representative of the Sloan Valve Company of Chicago. The Royal Flush Valves manufactured by this company are well known to the architectural profession throughout the country, and are used on some of the largest public and private buildings on the Pacific Coast. For the present Mr. Burke will have his headquarters at 1496 Guerrero street, San Francisco.

Recognition for Mr. Farquhar

R. D. Farquhar, architect of Los Angeles, has been commissioned to prepare plans for a new grammar school building to be built at Torrance by the Los Angeles Board of Education. A site of nine acres has been donated for the proposed school. Mr. Farquhar will design a group of municipal buildings for Torrance carrying out a civic center plan arranged by the landscape architect in laying out the city of Torrance. In addition to the school there will be a city hall and library in the group. This building is to be erected and donated to the city by J. S. Torrance, for whom the city is named.

$200,000 for New Homes

Guy Lowell of Boston, Mass., has commissions for the preparation of plans for three residences to be built in Southern California, the cost of which will aggregate more than $200,000. Mr. Lowell is the architect for the New York county court house, which will be one of the monumental structures of North America. He now has one hundred draftsmen working on the plans for the building, it is reported. Mr. Lowell was in Southern California recently inspecting the sites of the proposed residences for which he will make plans.

To Build Summer House

Clyde S. Payne is having plans prepared by Architect W. G. Hind of San Francisco for a summer house at Belvedere, Marin county.

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California State Board of Architecture

The San Diego Architectural Association gave a luncheon in April to members of the California State Board of Architecture, the northern and southern districts of which held their joint annual meeting at the U. S. Grant Hotel.

Addresses were made at the luncheon by several members of the State Board, dealing chiefly with the workings of the State law making it compulsory for architects to be examined and licensed before practicing in California.

The president of the board said that the attitude of the public had proven helpful in the administration of the law and that the board uniformly aimed to make the State certificate a proof of experience and competence by which public safety is secured, that being the chief object of the law.

Complimentary references were made by the visiting speakers to the beauty of the Exposition and its landscaping. The permanent features of the buildings and grounds especially impressed the visitors.

The members of the board present were E. A. Mathews, president; Sylvain Schnaittacher, John Bakewell, Jr., San Francisco; Sumner P. Hunt, Octavius Morgan, Los Angeles; and W. S. Hebbard, San Diego. Members of the San Diego Architectural Association at the luncheon were Charles Cressy, president; J. T. Lyman, Robert Halley, Walter Keller, Theo. C. Kistner, W. T. Johnson and D. H. Holmes.

Pittsburg Heater Company in New Quarters

The Pittsburg Water Heater Company has moved its San Francisco sales and service department to "Water Heater Row, 478 Sutter street, near Powell. The new quarters are larger and more conveniently situated than the old store on Powell street and the management is to be congratulated in finding such a desirable location.

Pittsburg heaters are very much in demand by those seeking a high-class, dependable article. The Pittsburg bungalow heater has proved extremely popular, filling a demand for a low-priced heater for the modest home.

Recent literature of the company says:

The "Pittsburg" Automatic Gas Water Heater is installed in the basement or any other out-of-the-way location. At the turn of a faucet the gas burners in the heater are automatically ignited and burn until the water reaches a pre-determined temperature or the faucet is closed, when all expense for heating water ceases. The "Pittsburg" is handsomely built from enduring copper, brass and iron, and will last a life time under ordinary conditions.

The cost of operation contrasted with the convenience afforded is remarkably low—one cubic foot of gas will provide one gallon of hot water. No matches to strike, no fires to light—nothing but a turn of the faucet and "quick as a wink" hot water is at hand, at a cost of but one cubic foot of gas per gallon. Where gas is $1 per thousand cubic feet, one thousand gallons of hot water may be had for a dollar and the small pilot charge. The maintenance expense is practically nothing, as the "Pittsburg" is built to withstand hard service.

Honor for California Student

The friends of Ralph Dalton Cornell of Long Beach will undoubtedly be interested to learn that he recently was awarded the annual competition for the Topiarian Club trophy in the Harvard school of landscape architecture. Fourteen drawings were submitted, the judges being Prof. J. S. Pray, Prof. H. V. Hubbard and Ferrucio Vitale of New York. The subject of the competition was the development of a given piece of property as a country estate with a system of formal gardens on a sloping site. The winner of the trophy has his name inscribed on it and holds it for one year. Cornell is a graduate of Pomona College, Southern California.

A book!

like the new **M & G** general catalog (9th ed.) is not published every day and the supply is ***not*** inexhaustible.

Seven sections will be required to complete the book.

Section No. 1, just off the press, lists a portion of the largest line of **Conveying, Elevating, Screening** and **Mechanical Power Transmitting Machinery** carried on the Pacific Coast and contains much valuable data.

It is free to machinery users—
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Architect May Collect for Sketches

Persons contemplating the erection of buildings who imagine they have incurred no obligation when they engage an architect to make plans and then for one reason or another decide not to build, should take notice of a decision rendered by Justice Brown in Department D of the township courts during the past month. W. C. Pennell, architect, of Los Angeles, obtained judgment against a client who held to this idea and ignored a claim for services. Mr. Pennell was engaged by Robert Marshall to prepare plans for a flat building to be erected on a lot which Mr. Marshall subsequently disposed of in a real estate trade. Preliminary sketches had been made when the building project was abandoned. Mr. Pennell presented a claim for $100 for service rendered, which Mr. Marshall refused to pay.

Mr. Pennell brought suit and the case was tried before Justice Brown. Mr. Marshall set up the claim that the architect had made the plans merely on a chance that he would obtain a fee in event the building was erected. The architect maintained that he had an agreement with the owner to make the plans and superintend the work for which he was to receive a fee of 10 per cent based upon the cost of the structure. There was no written agreement, but the architect proved to the satisfaction of the court that a verbal agreement had been made and was given a judgment for $50 and costs. A stay of execution for ten days was granted, an attachment having been previously issued, in order that the defendant might appeal the case if he desired.

Justice Brown, in commenting on the case, said it was unreasonable to expect that an architect could pay office rent, employ draftsmen, purchase office supplies and meet other necessary expenses incident to his profession and perform service for a client without any expectation of remuneration.

Heating Engineer Opens Office

Charles W. Fortune announces the opening of an office at 706 Baker Detwiler building, Los Angeles, as consulting engineer in heating, ventilating and power plant equipment. Mr. Fortune has for nearly two years been employed by the Los Angeles Board of Education as engineer in designing heating systems for the new school buildings recently erected, including the Franklin, Lincoln and the new Los Angeles High School groups. He has had a wide experience in all branches of heating, both in the United States and Canada. His articles as associate editor of The Architect and Engineer are well known to the readers of this magazine.

Flag Poles and Patent Tops

Messrs. Bolander & Hallawell, 270 First street, San Francisco, report that many architects are now specifying their "B and H" flag pole top because of its numerous good qualities. It completely protects the top of the pole from the elements. With this patent top it is possible to renew the halyards from the base of the pole without climbing the latter. Last but not least, it is possible to reeve the painter's rope from the base of the pole and make it safe for the painter to ascend. All of which greatly reduces the cost of upkeep and extends the life of the pole. Messrs. Bolander & Hallawell also manufacture and erect poles and are in a position to ship any size pole, as well as various style tops, to any point on the Pacific Coast. A catalog and price list will be mailed on request.

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Electric Plate Warmer in Demand

M. E. Hammond, manufacturer's agent, with offices in the Humboldt Bank building, San Francisco, reports having made a number of installations recently of the Prometheus electric food and plate warmer. One has been installed in the country home of Mrs. George Ross, Atherton, San Mateo county, and another in the Clarence Musto residence, recently completed in San Francisco, from plans by Henry C. Smith.

Mr. Hammond has recently been appointed San Francisco representative of the Palm Vacuum Cleaner Company, Detroit, Mich.

City Planning Conference

The Eighth National Conference on City Planning will be held at Cleveland, Ohio, June 5-7. California and the Pacific Coast will be represented by a number of delegates and the programme will include an address by Mr. W. Templeton Johnson of San Diego on "How to Get Started in City Planning," and a paper by Mr. John Nolen, Fellow of the American Society of Landscape Architects, Cambridge, Mass., on "Planning Problems in Cities of Less Than 100,000."

Country Club Houses

The members of the Santa Barbara Country Club, headed by F. F. Peabody and George Owen Knapp, have voted unanimously in favor of a new club house to be erected on the site now held by the Alston Land Association, and to cost $50,000.

George W. Kelham is preparing plans for a club house for the San Francisco Golf and Country Club to cost $50,000 and to be built near the county line.

Claremont Park Residence

Clarence A. Tantau, formerly with Bakewell & Brown, and now practicing the profession with offices at 519 California street, San Francisco, has completed plans for a two-story and basement frame and plaster residence to be erected in Claremont Park, Berkeley, for T. D. Stevens, that city.

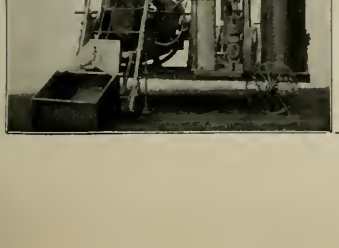
Dunham Radiator Traps in Berkeley Schools

All of the five new Berkeley school buildings, described and illustrated in this issue, are equipped with the Dunham system of vacuum steam heating. They use steam as the heating medium and circulate it by means of the well-known vacuum principle, with devices manufactured by the C. A. Dunham Company, of Marshalltown, Iowa. The system consists essentially of a source of steam supply, a steam distributing system that carries the steam to the radiators, a Dunham radiator trap which drains each radiator of all water of condensation and air without loss of steam, a system of return piping which carries away the water and air discharged by the trap, and a system of pumps which performs the three-fold function of producing a suction upon the return piping, eliminating the air from the system and forcing the water of condensation back into the boilers for re-evaporation.

The distinguishing feature of the system is the small radiator trap that connects between the bottom of each radiator and the return line. This little trap conserves the steam that enters the radiator and at the same time keeps the radiator free from water of condensation and air. Since the most of the common cause of noise in a system of heating is the accumulation of water and air in the radiator, the importance and worth of this device are quickly seen.

County Juvenile Home.

The preparation of plans for the proposed county juvenile home at Los Angeles has been started under the direction of J. Schulz, 305 Wright & Callender building, that city. Building will be three stories and will contain separate accommodations for dependent and delinquent children. There will also be a hospital, gymnasium, with shower baths, laundry, kitchen and dining room. Construction will be reinforced concrete. Cost, about $100,000.



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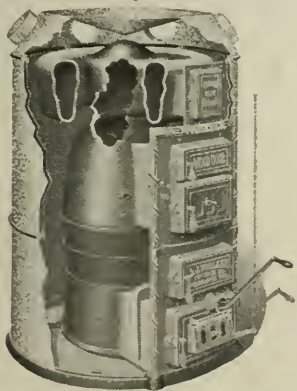
Mueller Furnaces

The "Mueller" return flue radiator furnace is made entirely of the best grade of cast iron, the best metal obtainable for the purpose. It is so constructed as to expose the greatest amount of surface over which the air passes in abstracting the heat.

The radiator and dome of this furnace are one solid casting, without a bolt or particle of cement being used in its construction, making it indestructible and positively gas tight. The shape of the dome and radiator, also the feed section, is such as to compel a free and abundant circulation of air over the castings.

The fire pot is made in two pieces, which allows for expansion and contraction at the middle, preventing cracking of pot, a defect so common in furnaces made with a pot in one piece or three pieces, or with corrugations, fins or flanges.



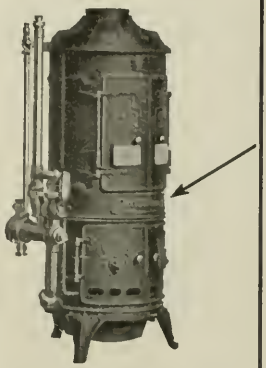
Mueller Return Flue Radiator Furnace with Double Door for Burning Coal or Wood

All "Mueller" furnaces are provided with a cast iron water pan, located so as to furnish the proper amount of moisture.

According to literature printed by the manufacturers, the "Mueller" furnace is positively gas tight and will successfully burn any kind of fuel.

All doors are perfectly fitted, an absolute necessity for the proper control of the fire. "Mueller" furnaces are made in Milwaukee, Wis., by the L. J. Mueller Furnace Co., who have been in the heater business since 1857. Many of these furnaces have been in constant use for more than thirty years, without a cent having been spent for repairs, have always given good satisfaction and are good for many years more.

Over 84,000 "Mueller" furnaces are in use throughout the United States. The California agent is Walter Mork, Berkeley.



In Planning The Home

the MAXIMUM in hot water comfort and convenience can be attained by specifying a "Pittsburg" Automatic Gas Water Heater. The "Pittsburg Way" of supplying hot water "Quick as a Wink" for domestic and personal needs, will meet the approval of the most discriminating client.

"Pittsburg" service luxuriates the ordinary conveniences of the toilet. Efficiency in the kitchen and laundry is greatly increased if a "Pittsburg" heats the water.

The "Pittsburg" is GUARANTEED mechanically perfect, is easy to install and requires little or no attention after it has been connected to the hot water piping.

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Prescott Court House Muddle

The Board of Supervisors of Yavapai county, Arizona, ignoring the advice of the District Attorney, have signed a contract for the erection of the new county court house to be built at Prescott and work will be commenced at once. The general contract was awarded to Rogers & Ashton of Denver, Colo., at $180,000. The District Attorney ruled that the contract was not legal because it was not awarded on the original bids submitted, as they were above the funds available. The plans and specifications were revised and the contract awarded on revised bids, which were taken without readvertising for competitive bids.

The attorney's opinion follows:

In compliance with your request, I hand herewith draft of proposed contract for building county court house, together with draft of proposed bond. You will notice I have said nothing in the contract about excavation nor has anything been said requiring the builders to remove all debris, etc., from the premises at the conclusion of the work. I assume that all these matters are covered in the plans and specifications. If not, they should be covered in the contract. All the conditions of this contract should be carefully gone into, and such others may be added as the judgment of the board shall dictate.

In handing you this contract, I desire to advise you that our office by so doing does not impliedly advise you that the contract is legal. You have not asked us for an opinion on this point, but I desire at this time to advise you that in my opinion, under the peculiar circumstances connected with the attempted letting of this contract, the whole proceeding is invalid, and that you cannot legally enter into this particular contract.

In the first place, under Title 40, Civil Code, it is provided substantially that no contract may be let to exceed the architect's estimates. Furthermore, in this case I am advised that the original bids under the advertisement to bidders were all turned down for the reason that some were too high; that this particular bid covered by this contract was accepted afterward not in competition, and without any advertising, but that about $20,000 worth of work and material were omitted from the plans and specifications.

In my opinion, the original bids should all have been turned down and a readvertisement should have been made for further bids. I do not think you can legally enter into this contract.

Attorney Morgan's opinion was substantiated by a communication from County Attorney O'Sullivan, a part of which reads:

From my investigation of your proceedings and actions in this matter, I am of the opinion that by reason of your failure to follow the law in such matters and on account of various irregularities in the premises, you have no authority under the law to enter into said contemplated contract with Rogers & Ashton.

In my opinion, you should advertise for new bids, and follow the law strictly in this matter.

Bank Building

Plans have been completed by William H. Weeks of San Francisco for a two-story Class "C" bank and office building to be erected at Ukiah for the Savings Bank of Mendocino County. Construction will be of brick and terra cotta. The estimated cost is $25,000, including the bank fixtures, which contract will be let separately.

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Rotary Oil Burners on the Hearst Ranch

One of the largest private installations of oil burners made in recent years is reported by Mr. H. D. Currence, secretary of the Rotary Oil Burner Company of Oakland. The installation consists of nineteen oil burners of the rotary type at "Hacienda," the Phoebe Hearst ranch, near Pleasanton, Cal. The burners have been placed in the Hearst house as well as in all the principal outbuildings, including the annex, ranch house, etc. Heretofore coal has been used exclusively on the Hearst estate. The complete change to oil shows the trend of the times and demonstrates once again the efficiency of the modern oil burner. The Iron and Steel Contracting Company of San Francisco furnished all the tanks. Contract for the burners and equipment amounted to nearly $5,000.

Wasco Plans Completed

Plans for the new Wasco High School have been approved by the County School Superintendent, L. E. Chenowith. The plans call for an "E" shaped building, having a frontage of 200 feet and constructed of brick with a concrete plaster exterior. In addition to the regular class rooms, there will be an auditorium, manual arts and domestic science departments, irrigation reservoir and swimming pool, steam heating, electrolier lighting system, etc. Cost, $30,000. E. J. Kump of Fresno is the architect.

Paint Plant Expands

C. Roman & Co. have made extensive additions to their paint factory and its equipment at 2253 Folsom street, San Francisco, following the recent fire. The varnish department especially has been improved. These additions will enable the Roman company to supply the trade with varnishes without delay and at the old-time prices.

PLATE GIRDER BRIDGES FOR SALE.—Three plate girder bridges, aggregating 1020 ft. in length, consisting of 56 plate girders 30 ft. long and 3 ft. deep; 40 plate girders 60 ft. long and 5 ft. deep, and steel supporting towers. Fabricated by Milliken Brothers, Staten Island, under Robert W. Hunt & Co.'s inspection for mill and shop. Bridges were not erected. Steel is new and in excellent condition, stored near Santa Fe tracks, San Diego, Calif. Plans and specifications may be obtained upon application to Purchasing Department, San Diego Electric Railway Co., San Diego, Calif.

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Splendid Plumbing Installation in Berkeley Schools

All five Berkeley school houses, illustrated in this issue, are equipped with Crane plumbing. The City Architect specified Crane urinals, lavatories and toilets. The installations have proven very satisfactory and it may be said without exaggeration that no school in the State has anything on the Berkeley schools insofar as splendid sanitation is concerned. The arrangement of toilets is such that as the schools are enlarged—most of them have been built on the unit basis—additional fixtures can be installed without inconvenience or great expense. In the neighborhood of 200 fixtures have been used. All lavatories are fitted with "Triumph" self-closing basin cocks. Closet combinations have the "Purus" syphon jet bowls, those for boys having an extended lip, while the bowls for girls are fitted with the raised flushing lip. The urinal installations are Crane Company's porcelain stalls, fitted with non-metal bearing, automatic cast-brass pendulum tank valves, with regulator in vitreous china tank.

Mr. Ratcliff's specifications, which were followed in detail, are printed below, and may prove a guide to architects desiring similar installations in future work:

PLUMBING FIXTURES

Urinals

Urinals in boys' toilet room to be white porcelain urinal stalls, Class B, equal to Crane Co.'s Plate B-4174, fitted with non-metal bearing automatic cast brass pendulum tank valve, fitted with regulator, into a No. 2 vitreous china tank. The supply valve to be of Key pattern and escutcheon, so that same will be accessible to janitor from within the toilet room. This control valve to set 6 feet 10 inches from the floor. Tank to be set full height from floor, leaving 12 inches from ceiling to top of tank. Discharge pipe from tanks to urinals to be nickel plated with suitable nickel plated holders to walls. Three urinals to constitute a unit for a No. 2 tank.

Lavatories

Lavatories to be equal to Crane Co.'s B-295 vitreous lavatory, fitted with 1¼ inch nickel plated brass P trap with cleanout, N. P. brass waste and flange, each lavatory to be fitted with Plate B-664 Triumph Junior N. P. self-closing basin cock for cold water. Tail pieces and couplings shall be threaded and connected to ½ inch N. P. supplies to wall, and provided with N. P. brass loose key compression stop. Hot water cock hole to be neatly covered with a nickel plated cock hole cover.

Men's and Boys' Toilets

To be equal to Crane Co.'s B-2392 Purus syphon jet closet combination, fitted with flush valve, bowl to have extended lip and fitted with never-split serpentine post hinge seat. The flushing device must be of non-water by-pass construction and have means for regulation without dismantelling valve, or the necessity of such appliances or additional valves. These combinations when installed must be guaranteed by the manufacturer to give a full water seal and refill under all pressures. The operating handle of flush valve must be so designed that the water supply to closet bowl can be at all times under the control of the user.

Closet bowl to have full round way passage and constructed so as to pass a 2½-inch ball.

Girls' and Women's Toilets

To be equal to Crane B-2394 Purus syphon jet closet combination, fitted with flush valve, bowl to have raised flushing lip and fitted with Crescent post hinge seat. The flushing device must be of non-water by-pass construction and have means for regulation without disturbing valve, or the necessity of such appliances or additional valves. These combinations when installed must be guaranteed by the manufacturer to give a full water seal and re-fill under all pressures. The operating handle of flush valve must be designed that the water supply to closet can be at all times under the control of the user.

Closet bowl to have full round-way passage and constructed so as to pass a 2½-inch ball.

Where flush valves are specified the piping behind toilets must be 2½ inches diameter and must be carefully laid out by plumber so that sufficient water will be delivered to flush properly.

Kawneer Is the Victor

The following article, published in the Niles (Michigan) Daily Sun of May 6th, and headed "Kawneer Is the Victor," will be of interest to Pacific Coast architects and contractors:

The patent suit before U. S. District Court, Southern District of New York, of the Kawneer Manufacturing Company of Niles vs. the Zouri Drawn Metal Company was decided a short time ago in favor of the Kawneer Manufacturing Company.

The Zouri Company failed to perfect their appeal in this case and, therefore, the Kawneer Manufacturing Company is given a final decision in this suit.

The Zouri Company asked for a stay in accounting in this suit, but the Court has refused to grant the same; and Judge Hand yesterday handed down an opinion in which he instructed the Zouri Company to deliver their books to the Master of the Court so he could determine the amount of damages that should be paid the Kawneer Company for infringement of their patents.

In this settlement it is said the Kawneer Company will not only be entitled to the profits the Zouri Company has made, but also the profits of their agents, and to receive royalty from the merchant who has used their store front. The Kawneer Company will also be entitled to damages which they have sustained in being forced to meet this infringing competition.

This division is said to be final and a settlement under the court's ruling is the next step in this litigation, which has extended over a long period, as is usually the case in all patent suit litigation.

The Kawneer Manufacturing Company has been represented throughout this litigation by Wallace R. Lane of Chicago.

The litigation with the Zouri Company began in 1912, when the company began the manufacture of a style of store front that the Kawneer Company deemed an infringement of patent and suit was begun.

Country Residence

Charles Peter Weeks, Mutual Bank building, San Francisco, is preparing plans for the country house with garage and other buildings to be erected near Napa for Myrvin Hollinger, chief chemist for the Standard Portland Cement Company. The estimated cost of the residence is $12,000.

THE ARCHITECT AND ENGINEER OF CALIFORNIA

JUNE 1916

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Number 3.

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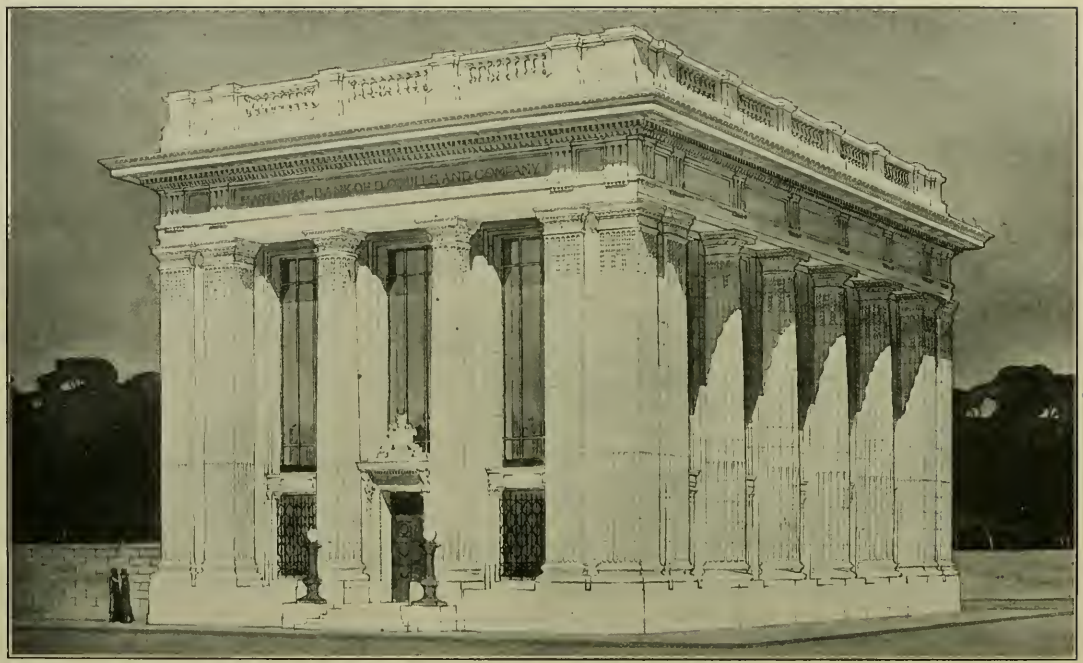

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Frontispiece
The Architect and Engineer
of California
For June, 1916

THE
Architect and Engineer
Of California

VOL. XLV. JUNE, 1916 No. 3.

Monumental Bank Buildings

By CHARLES PETER WEEKS, Architect*

German Savings Bank Building, San Francisco

WHAT an opportunity a one-story bank building affords the architect! With what a thrill is the commission to design such a building received.

It is the one form of commercial building that permits—nay, requires—a monumental treatment, and permits the architect to laugh in the face of his arch enemy, the plate glass show window. For the essential character of a bank is that it be substantial, and that its building look substantial, so that the mental impression created in the depositor is that of absolute stability and infinite endurance; and what can better express these qualities than much masonry?

The greatest joy created by architectural construction is caused by these qualities because they express the qualities we aim for in ourselves—and beheld by the passerby, they create a lasting impression on his mind and he remembers the location of such a building when requiring a bank.

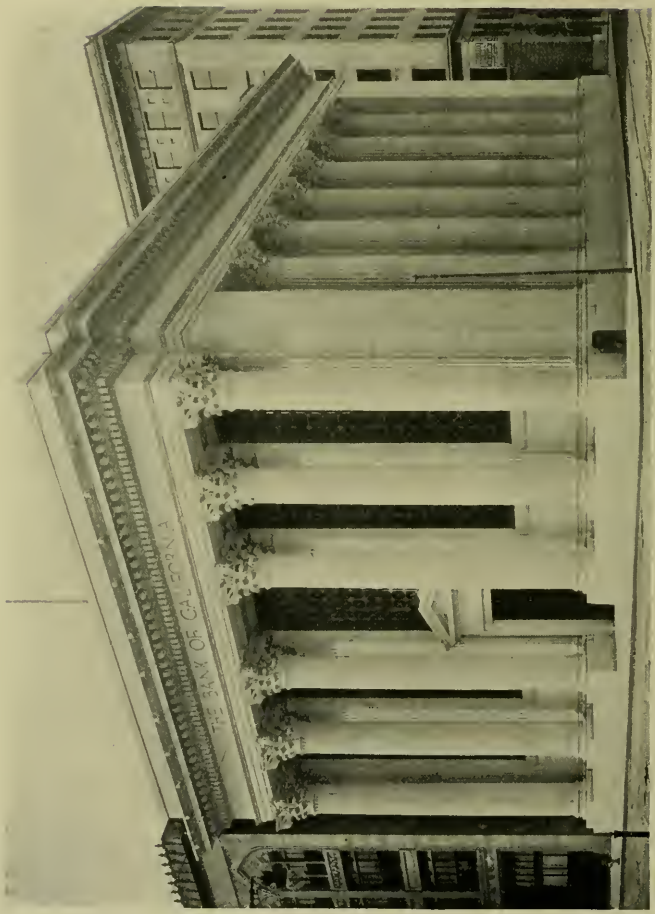
This type of building then not only makes for fine architecture, but for good banking business, hence the one-story bank building has been adopted the world over as the best type per se.

At times, however, conditions arise in different banking institutions that require consideration to be given to other phases of the subject, and then it is—and only then—that consideration should be given to the bank in the skyscraper.

There is a certain sacrifice made in the impression created in the public mind in installing a bank in a skyscraper—compared with its neighbor of a single story it becomes of the second class.

This is due to its being only one of many occupants—a bank in an office building—whereas what it should be to become of the first class is a bank building with offices in it. But this is a difficult thing to do—to design a building of many stories so that it has the essential characteristics of a bank building and so that the offices have the appearance of being only parts of one big institution. The Guaranty Trust Company's building in New York City, by York & Sawyer, has come nearer to the solution of such a problem than any I know.

*President of the San Francisco Society of Architects and the San Francisco Architectural Club.



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MODEL, ANGLO AND LONDON PARIS NATIONAL BANK
Albert Pissis, Architect

ANGLO AND LONDON PARIS NATIONAL BANK
Albert Pissis, Architect

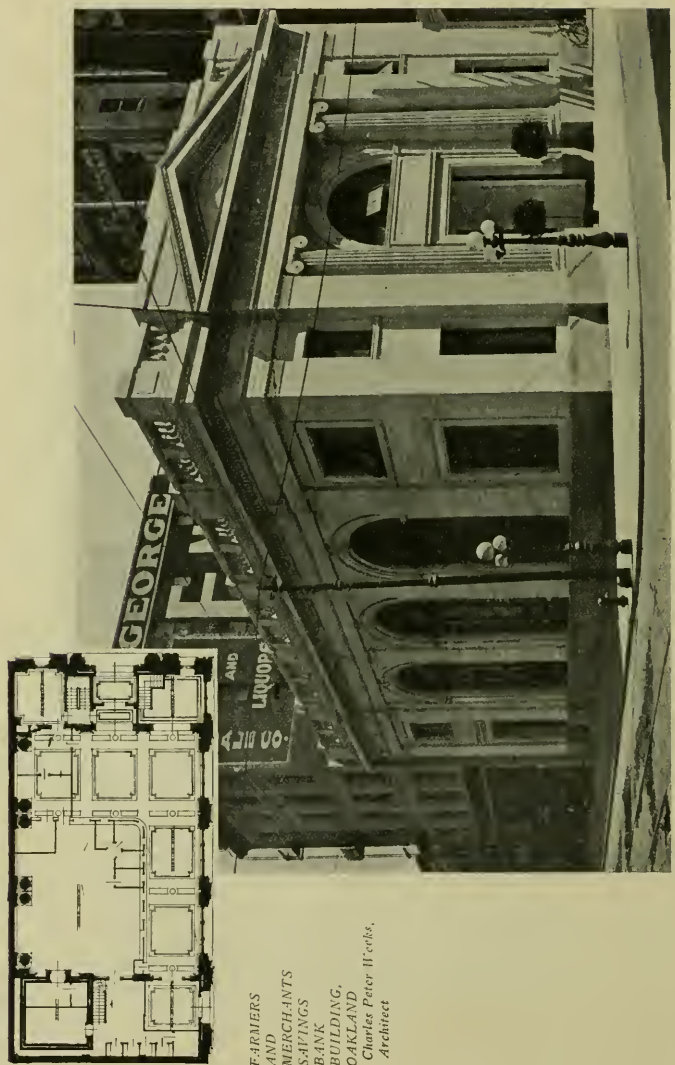
COLONNADE, SAVINGS UNION BANK OF SAN FRANCISCO
BLISS & FAVILLE, ARCHITECTS

SAVINGS UNION BANK AND TRUST COMPANY BUILDING
Bliss & Faville, Architects

The conditions requiring a bank to build an office building are income on investment and need to hold centers of business population in the locality. Many bankers prefer a more liquid investment than improved real estate and are willing to take the loss on income, charging it to advertising.

The following is a comparative statement of investment, expense, etc., on a lot 50x100 feet with a one-story and an eight-story building:

One-Story Building.	
Cost of building	$110,000.00
Cost of lot	135,000.00
Total investment	$245,000.00



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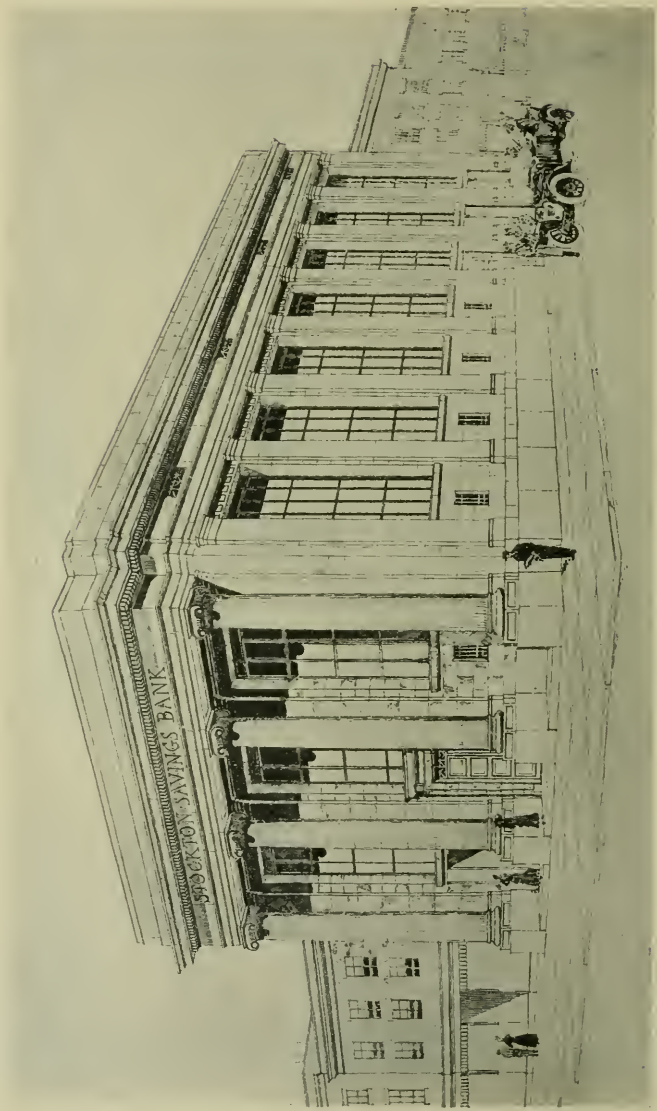
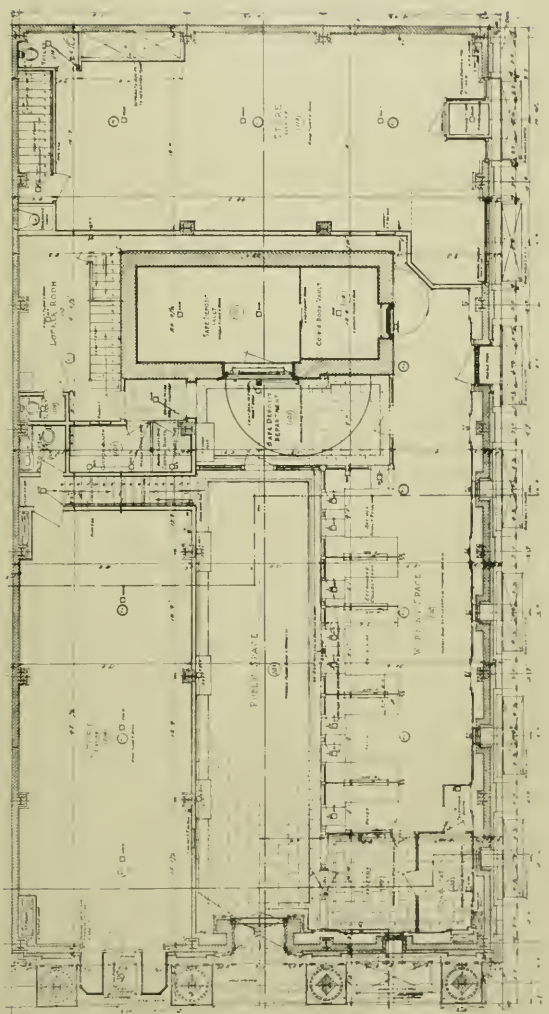
AND
MERCHANTS
SAVINGS
BANK
BUILDING,
OAKLAND.
Charles Peter Weeks,
Architect

MISSION BRANCH, GERMAN SAVINGS AND LOAN SOCIETY
Herbert A. Schmid, Architect

HIBERNIA BANK BUILDING, SAN FRANCISCO
Albert Pissis, Architect



STOCKTON SAVINGS BANK, STOCKTON
CHARLES W. DICKEY, ARCHITECT



FLOOR PLAN, STOCKTON SAVINGS BANK
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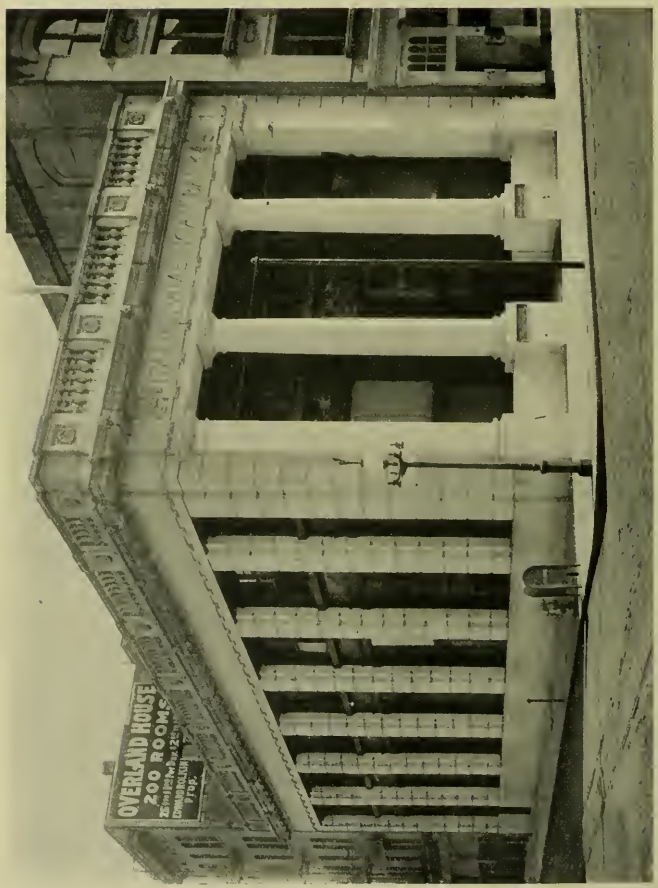
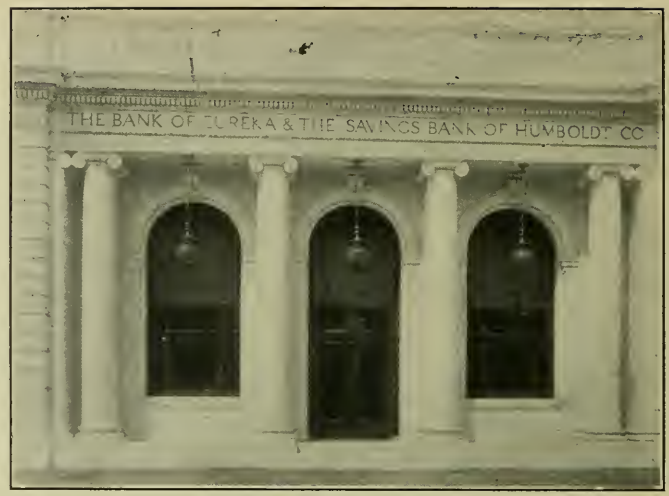
CONTINENTAL BANK BUILDING, SAN FRANCISCO, CALIFORNIA
John Galen Howard, Architect



ITALIAN-AMERICAN BANK, SAN FRANCISCO
JOHN GALEN HOWARD, ARCHITECT

FARMERS AND MERCHANTS BANK BUILDING, LOS ANGELES
Morgan, Walls & Morgan, Architects

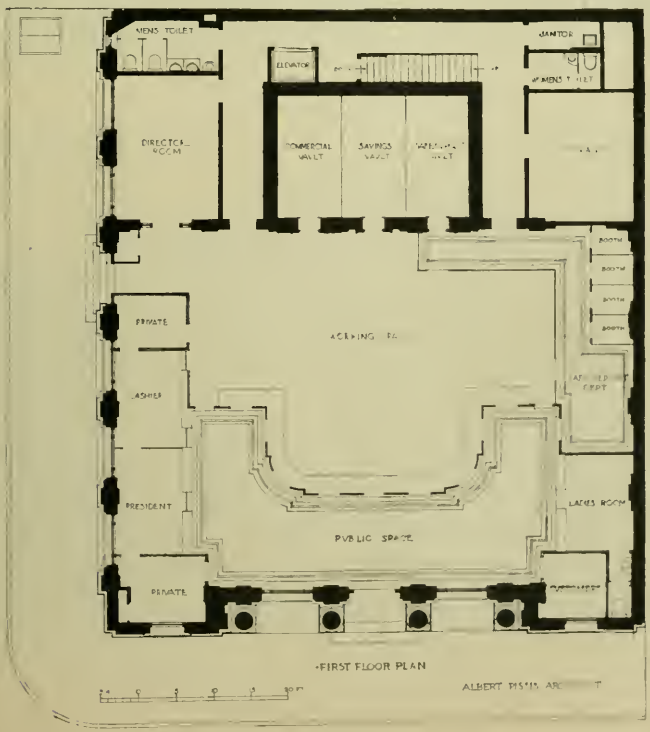
FIRST NATIONAL BANK, MONROVIA, CALIFORNIA
Parkinson & Bergstrom, Architects



ENTRANCE, BANK OF EUREKA
Albert Pissis, Architect

INTERIOR, BANK OF EUREKA
Albert Pissis, Architect

BANK OF EUREKA AND FLOOR PLAN
Albert Pissis, Architect



WHITTIER SAVINGS BANK, WHITTIER
T. Beverly Keim, Jr., & Co., Architectural Engineers

STATE BANK BUILDING, SAN PEDRO
Edelman & Barnett, Architects

BUILDING FOR THE SPRECKELS INTERESTS, SAN FRANCISCO
Macdonald & Applegarth, Architects

Expenses per year	$ 5,000.00
Interest on investment at 6 per cent	14,700.00
Total expense per year	$ 19,700.00

PASADENA NATIONAL BANK BUILDING, PASADENA, CAL.
Sylvanus B. Morston, Architect

VAULTS AND MARBLE CLOCK, LOS ANGELES BANK INTERIOR
Parkinson & Bergstrom, Architects

EIGHT-STORY BUILDING.

Cost of building	$225,000.00
Cost of lot	135,000.00
Total investment	$360,000.00
Expenses per year	$ 11,000.00
Interest on investment at 6 per cent	21,600.00
	$ 32,600.00
Income from offices—per year	16,000.00
Net expense—per year	$ 16,600.00
Difference in expense—per year	3,100.00
	$ 19,700.00

INTERIOR CAPITOL NATIONAL BANK, SALEM, OREGON
John V. Bennes, Architect

It will thus be seen that, although the income represents a good interest on the difference in investment, yet the actual amount of money to be charged to advertising is not great.

This point about advertising is not imaginary. The difference in appearance of substantial wealth between a one-story bank building and a bank in an office building is that between a man living in an apartment house and one owning his own residence. The tenant in the apartment house may even own the building, but no one knows it without looking it up in the records.

It at times becomes necessary in the growth of a young city to hold the business population in an established district, so that property values will not decrease and the patronage of a bank will increase; or to develop banking business in a new section, offices are required. When such occasions arise then it is that a banking institution is justified in building a skyscraper home, but even then of such a design that one will say, without looking at the signs on the door, "This is a bank building."

INTERIOR CAPITOL NATIONAL BANK, SALEM, OREGON
John V. Bennes, Architect

Architecture of the Capitol National Bank, Salem, Ore.

THE Capitol National Bank of Salem, Oregon, has taken a new departure in bank architecture, the style being an adaptation of the earliest classic Grecian—the early Doric of the sixth century before Christ.

The entablature consists of the architrave, which is in one member. The frieze is without ornament, as is the cornice above it. This entablature rests upon clustered Doric pilasters, from which also spring the Roman arches forming the broken vaulted ceiling. The long, plain ceiling spaces of the middle section are relieved by oblong alcoves. The room is lighted by a skylight in six sections, with the white metal border in Greek key design, the interstices of which furnish ample ventilation.

The floor is of white flint tile. The walls to the height of the bank fixtures are of marble with mahogany cornice, the base of which is Verde antique.

The work has all been done in a most substantial manner, upon a substructure of channeled steel bars, securely anchored to and braced by solid brick walls. No wood has entered into its construction except the mahogany casements and fixtures. All the projections, frames, casings, balustrade and pilasters are of cement and stucco, built up in position wherever it was possible for templates to be used. Corners of entablatures were cast on the ground, and thoroughly attached to and incorporated with the solid parts. As to the permanency of stucco work, James Ferguson, the archaeologist, says: "While stone and marble have perished, the stucco of these (the Calcutta) vaults still remains and is as impressive as any other relic of ancient Rome."

The rear section, separated by the classic balustrade of the Seventeenth century, is modern and up to date, containing the vaults, consultation rooms, heating plant and lavatories, also the library and directors' room on the mezzanine floor, from which also a circular stairway reaches the supply and storage rooms on the floor above.

John V. Bennes of Portland, Ore., designed the bank interior.

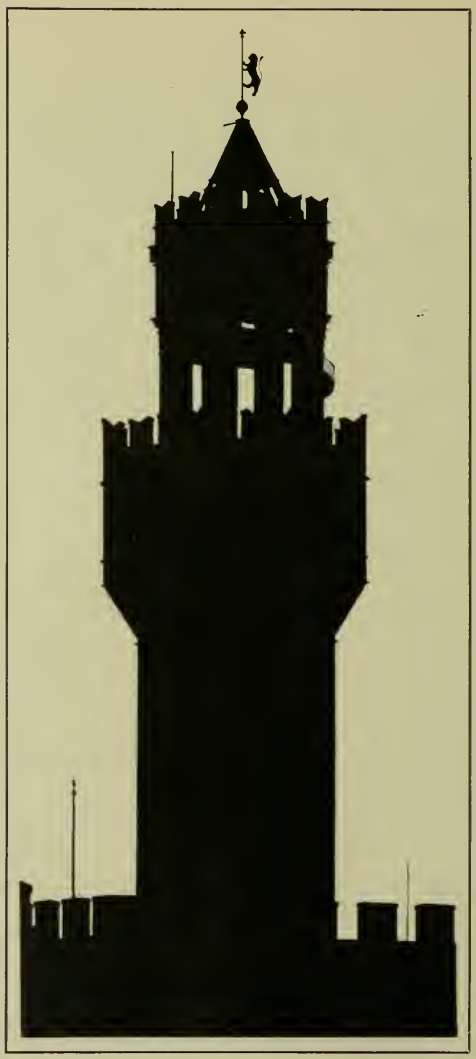
* * *

Meerschaum as a Building Material

Even the most aesthetically inclined of our American millionaires would hardly consider the luxury of living in a palace built of meerschaum as within the range of their fortunes, yet there are many unpretentious houses of this material in the Spanish town of Vallecas, near Madrid, where a coarse variety of this substance is to be found. On the other hand, the Moroccans, just across the Straits of Gibraltar, find that still another variety of meerschaum lathers freely and they use it, perhaps sparingly, as a substitute for soap.

The chips and sawdust of the meerschaum pipe factories make an excellent cleaning powder for removing stains from costly fabrics. An inferior pipe is also made from these scraps, the fragments being bound together with some solution and then molded into blocks.

Meerschaum is found in Greece and in Hrubschitz, Moravia, as well as in Asia Minor, and to a limited extent in Pennsylvania, South Carolina and in the upper Gila valley, near Silver Lake, N. M.—Exchange.



Silhouette of Palazzo Vecchio, Florence
From a drawing by H. G. Simpson

The Cathedral, Durham, England

The Skyline of San Francisco—An Opportunity*

By HORACE G. SIMPSON, Architect†

WHO that has traveled abroad and has viewed the hill-towns of the Old World with their wonderful silhouettes can fail to be impressed, upon returning to San Francisco, with the opportunity which we have here? Who, having seen Amboise, and Chinon, and Azay-le-Rideau, but is pained by the vast unlovely bulk of the buildings which are robbing our hills of their native beauty and putting nothing of man-made beauty to take its place? To such it must be evident that we have lost and are losing an asset of beauty and of civic distinction such as few cities possess. It seems to me that altogether too much talk is spent upon our natural advantages and too little upon what we are doing and are going to do to preserve and enhance them. An unlovely town on a featureless site is unfortunate, but upon such a site as San Francisco's it is a crime—"it is worse than a crime; it is a blunder." Is there no lesson that we may learn from such noble examples as Durham

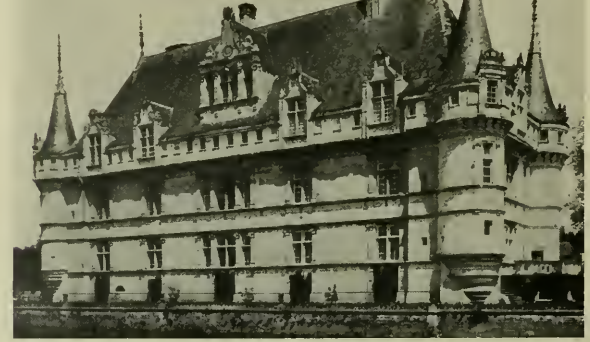
Panorama of Paris

*The illustrations shown are taken from Mr. Simpson's collection of European photographs and from special views of San Francisco buildings.

†Of Wood & Simpson, Architects, San Francisco.

Chateau and Town, Amboise, France

Cathedral towering above the water upon its cliff?—or Lincoln, whose majestic bulk dominates the plain for miles around? Or, to turn to lesser monuments, may we not draw inspiration from the exquisite, dainty slenderness of Trinity College spire at Cambridge or the tranquil beauty of St. John's at Oxford and of the Castello San Angelo at Rome? Is there nothing in the silhouette of Florence, with its famous towers and domes outlined against the sky, which may arouse us from our complacency to realize how fast opportunity is slipping from our grasp? I can imagine already the remark that the examples cited are not suited to modern conditions nor subject to the requirement of investment returns. Stupidity and avarice are always entrenching themselves behind those investment returns and making them the "goat" for every crime. Is it not true that the old cities of Europe somehow worried along and evaded the clutches of bankruptcy, in spite of their possession and enjoyment of beauty? May not we do as much with the aid of our vaunted "American push," "efficiency," "organized effort," etc., which are the occasion of so much complacency and self-congratulation among us? And in these days when civic distinction is be-



Chateau Azay-le-Rideau, France

ginning to be recognized as a business asset of cities, is it "good business" to let the natural attraction of our varied and extensive skyline be buried under the awkward bulk of monstrosities whose only excuse is revenue? Are we so enslaved to the production of revenue that we may not enjoy beauty or create it? Or is

Silhouette of Town and Chateau, Chinon, France

beauty so fatal to revenue that the two may not exist together? Just now we are much engrossed in the discussion of European militarism, of whether the state exists for the people or the people for the state. Let us turn for the moment to our own case and question whether business exists to serve the people, or the people to serve business.

Let no one imagine, however, that anything impractical or extravagant is proposed—indeed, we already have many examples which actually are effecting the needed embellishment of the city's skyline. The Ferry Tower is unquestionably of these, serving, as it does, to mitigate the sordid monotony of our water front. Further up town the Hobart building has done a similar service for the central business section. Its strong and graceful contour and the variety and interest of its forms are a positive delight to the eye. And in the civic center the noble dome of the City Hall is conferring distinction and interest upon a section of the city which, visibly, had need of them. Our late lamented "Jewel City" was also replete with beautiful silhouettes of almost inexhaustible variety, whose destruction fills us with regret.

Skyline of the Chateau, Chambord, France

It should be noted, however, that these successful examples are upon *flat land* and therefore they do not represent our most difficult problem nor the one which is most frequent in a hilly city like San Francisco. Also most of the favorable instances referred to set upon comparatively low ground and therefore do not figure conspicuously in a general view of the city, while the ponderous ungraceful masses which oppress Nob Hill and the untidy dilapidation which infests Telegraph Hill have a prominence which is unfortunate and unjust.

The Cathedral, Lincoln, England

Let those who would advance the plea of economic necessity reflect that the ugliness which

Ferry Building Tower, San Francisco

we may abolish is the result, not of economy, nor of necessity, but of stupidity and public indifference; and when once the tide of public demand sets in the direction of buildings more graceful and more gracefully adapted to their sites, those of the old order will go their way to oblivion and destruction, as such things

Trinity College, Cambridge, England

Hobart Building, San Francisco
Willis Polk & Co., Architects

A Glimpse of Florence, Italy, from the Boboli Garden

St. Peter's, Rome, from the Vatican Garden

inevitably must. It is but another instance of the "survival of the fittest." Would it not be better business policy to build so that this journey to the scrap heap might be postponed? Would it not be wiser civic policy to acquire beauty and distinction which were so obvious that "boosting" would be unnecessary?—a charm so real that we might truly say, "We don't have to prove it—we admit it."

Castello S. Angelo, Rome

St. John's College, Oxford, England

* * *

Caesar Would Like New York

Julius Caesar would feel at home in New York, as New Yorkers think. Not, according to reports from there, because of the worship of the gods in the temples and altars along the Great White Way, not because of the Croesuses there, or Roosevelt the ex-consul, but because of the many architectural reminders along the thoroughfares.

We are told that there is more than a suggestion of ancient Rome in several New York streets: The colonnade of the new postoffice, with its full score of great columns, worthy of Rome at its height; this colonnade has been carried out with a classic severity and correctness which would doubtless have won high praise from Roman critics; the colonnade before the new municipal building would have looked well facing the Roman forum; the facade of a great bank on Broad street and a familiar block on Lafayette place hold the same suggestion; the doorways, windows and other details of many modern office buildings have been so closely copied from famous Roman originals that a citizen of ancient Rome would feel very much at home in such surroundings.

The circular, or elliptical court house, a massive structure, at least might suggest the coliseum to Caesar; and the Broadway policemen, standing like Roman senators, would add verisimilitude.—Improvement Bulletin.

Housing in England after the War*

By J. A. LOVAT-FRASER, M. A., LL. B.

WHILE it is essential that the principal energies of the nation at the present time should be given to the task of carrying to a successful end the titanic struggle in which we are engaged, it is also important that thought should now be devoted to the problems which will arise when the war is concluded. The country has had to pay very dearly in men and money for its unpreparedness for the contest with Germany. Let this be a warning to us to make some preparation for the unprecedented conditions which will arise when the present war is finished. When the great struggle with Napoleon came to an end in 1815 there was a prolonged period of the most acute distress. One of the best accounts of what happened is contained in Lord Beaconsfield's novel of "Coningsby." When the peace came, says Lord Beaconsfield, the people found themselves without guides. They went to the ministry; they asked to be guided. What did the ministry do? asks Lord Beaconsfield. They fell into a panic. There must be no panics after this war. The situation must be prepared for, and, if it is prepared for, its evils may be mitigated and to a large extent neutralized. Above all, we owe a debt of honor to our soldiers, many of whom have unselfishly sacrificed position and prospects to assist their country, and that debt of honor must be fulfilled by the government and country they have served. We must see to it that their self-sacrifice is not rewarded by anxiety and distress and destitution.

Among the most pressing problems that will have to be faced after the war is that of unemployment. At the present time there is no unemployment. The withdrawal of several millions of men from the labor market has exhausted the normal margin of unemployed. The people who have been thrown out of their ordinary employment by the war, like the men in the building trade, have been absorbed elsewhere. The government itself is employing a gigantic number of both men and women. The result of all this has been to produce a semblance of great prosperity, but it is a semblance only and utterly unreal. We are living on the principle of the people of the island in Gilbert and Sullivan's opera, who supported themselves by taking in one another's washing. The produce of a vast amount of the industry now being carried on is wholly unfruitful. Its object is not the creation, but the destruction of wealth. It is not increasing, but depleting our capital. The longer the war lasts the more is our capital being exhausted. The greater the exhaustion of capital, the more profound and the more prolonged will be the depression after the war, and the slower and more painful our recovery.

The unemployment problem will be accentuated after the conclusion of peace by several important factors. Firstly, the abnormal activity in factories and yards engaged in producing war materials will come to an end. The government will terminate the present excessive expenditure as soon as they can. The high wages now being paid will be stopped, and many people will find themselves out of work, while those in work will receive less remuneration. Secondly, the demobilization of the army will flood the labor market with men wanting work. One does not know how large an army will have to be retained after the war, but, in any case, a huge number of men will be released. Thirdly, the large number of women, who have been doing men's work, will make the problem more difficult. If re-

*A paper read at the annual meeting of the South Wales Garden Cities and Town Planning Association.

tained they will keep men out of the work they are doing. If dismissed they will accentuate the unemployment problem.

The result of these factors will be that a period of unsettlement and dislocation will ensue immediately after the conclusion of peace. Mr. Seebohm Rowntree, who contributed an able article to the Contemporary Review of October last on "Home Problems After the War," thinks that this period of unsettlement and uncertainty will last for only a few months, and will be followed by a period of feverish activity. In this he is probably correct. The nations who have been affected by the war will be eagerly repairing its ravages, manufacturers will want to renew their depleted stocks. France, Belgium, Russia and Serbia will be rebuilding their ruined towns. Ship owners will want to replace the ships they have lost. It is difficult to estimate how long this period of activity will last, but Mr. Rowntree thinks it will not continue for more than three or four years at most.

After this period of activity there will almost certainly be a long period of depression. The world will be so much poorer. Millions and millions of capital will have been lost through the destruction of property, the stoppage of trade, the withdrawal of millions of men from productive industry, the premature death and disablement of innumerable others. The unemployment problem will be very acute, unless the government acquire a mastery of the position. How, then, can the unemployment problem be dealt with, not only during the period of depression after the period of activity, but during the brief transitional period immediately after the war is ended?

The first remedy suggested by Mr. Rowntree is one that especially interests those of us who are connected with the Garden Cities and Town Planning movement. He proposes that employment should be provided by the building of working class houses. There is undoubtedly a grave shortage of houses in the United Kingdom at the present time. Mr. Aldridge, in his article in the Year Book of this Association, expresses the view that the shortage is at least 400,000. He also quotes Mr. Shelton of Nottingham—a leading authority—who states that, in addition to this shortage 1,500 to 1,600 new houses are required to meet the normal growth of population every **week.** Further, every week 600 new houses are required to replace worn-out dwellings or to mitigate overcrowding in congested areas. The position has been greatly worsened by the almost complete stoppage of house building during the war. In the interests of health, of morality, of national well-being, the erection of dwellings for the workers especially on a gigantic scale is absolutely necessary, and nowhere more than in South Wales.

The provision of those much-needed dwellings would give a vast amount of employment, and every means should be adopted to further this object. Everyone who has given the most cursory attention to the problem of housing the working classes realizes that a great part of the work must be done by public authorities. It is the duty of public authorities to prepare their schemes, and make their plans now. Now is the time to resolutely face the task of erecting dwellings for the workers. "An evil," says a great thinker, "ceases to be an evil from the moment in which we begin to combat it." In preparing for a great house-building movement after the war, the country will be at once fighting the unemployment problem and combating the housing one. Public utility societies and co-partnership schemes should be encouraged. Public authorities should acquire land and lease sites to bodies which will undertake the erection of dwellings. Town planning schemes should be prepared now, so that building and urban development, when they take place, will be on sound lines. The government should be pressed

to urge local authorities to prepare town planning schemes and should state the terms on which they will assist after the war. They should try to make the Town Planning Act a reality.

Closely allied to the work of providing houses is that of cleansing slums and making roads. Mr. Rowntree suggests both of those objects as means of providing employment, and the suggestion will probably appeal strongly to supporters of the town planning movement. Another means of employment which would also have our support is the work of afforestation, which would engage a very large number of men. If one-sixtieth of the total area of eight and a half million of acres, which the Royal Commission on Afforestation in the United Kingdom reported as suitable for the purpose, were planted, it is estimated that over 25,000 men would be required during four winter months. Several corporations have undertaken the work of afforestation on a small scale with great success, and the nation should undertake it on a large scale. It is most healthy and in many ways attractive work, and the nation would be the gainer by the addition to its industrial population of (say) 50,000 families supported by afforestation. This work is but part of the larger question of the development of our whole national resources. For every tree cut down, two should be planted in its place. We should follow in this country the example of President Roosevelt in the United States, who appointed a National Resources Commission, which has done valuable work in the direction of encouraging the development and preventing the waste of national resources.

Other means of providing employment for the workers might be suggested, but my object has been to put forward remedies for unemployment which more especially appeal to those associated with our movement. The important matter is that definite schemes should be formulated, and that a policy of drift and **laissez-faire** should be avoided. As Mr. Rowntree says, "Since the beginning of the war many a man has been in regular work who scarcely knew before what regular work meant. His character and physique have improved. He is a better man—a national asset instead of a national liability." If this war has brought any advantages, they must be retained and made permanent. We must not go back when peace is declared; we must go forward. A resolute handling of the unemployment problem will help to promote this advance.

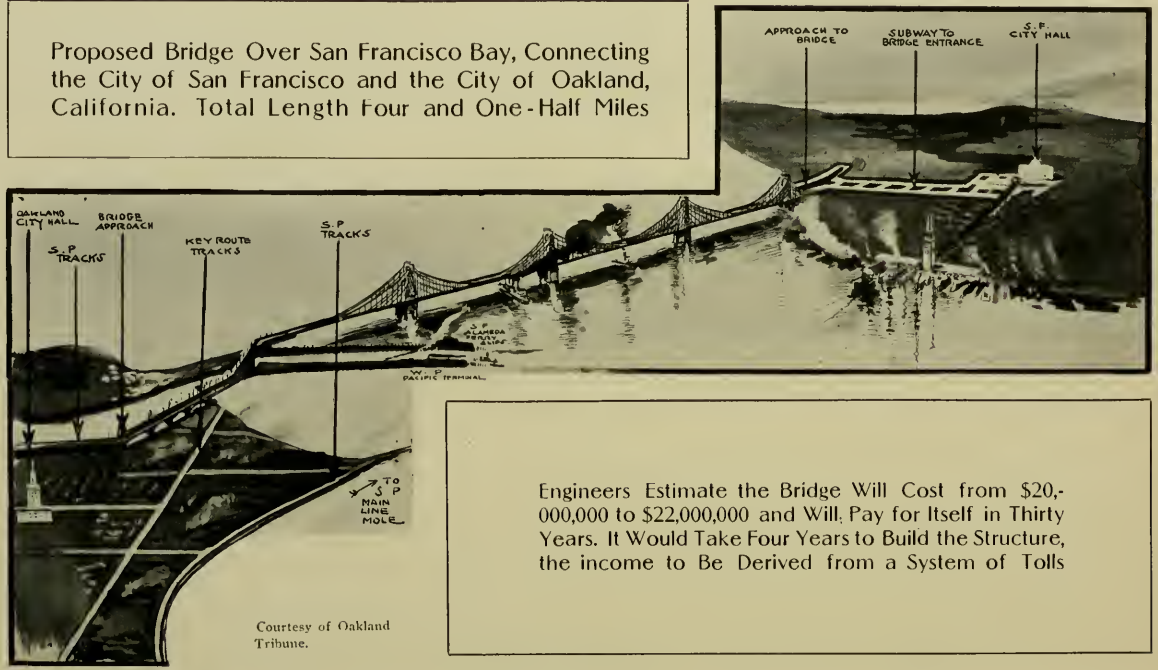
* * *

Homes No Longer Complete Without a Garage

Fifty years ago nearly every gentleman who could afford a horse had one, and outside of congested centers there was a stable in connection with most residences. Society is returning by another lane with a different vehicle to that same state of mind, and real estate developers and investors must take that fact into their calculations. Even if a buyer does not wish to keep a car, he will be wise if he looks ahead to the time when he may possibly wish to market his property quickly, for the public taste in this direction is certain to extend and continue indefinitely, because the automobile combines both utility and pleasure, the same as the horse.

The automobile, in a word, has become a fixed and permanent part of the home life. Nearly every man who thinks of having a house of his own includes a garage in his thoughts. The city planner or landscape architect who does not make a place for it in his scheme is behind the times.—Improvement Bulletin.

Proposed Bridge Over San Francisco Bay, Connecting the City of San Francisco and the City of Oakland, California. Total Length Four and One-Half Miles



Courtesy of Oakland Tribune.

Engineers Estimate the Bridge Will Cost from $20,000,000 to $22,000,000 and Will Pay for Itself in Thirty Years. It Would Take Four Years to Build the Structure, the income to Be Derived from a System of Tolls

Spanning San Francisco Bay with Suspension Bridge*

AS an indirect result of the Panama-Pacific Exposition the commercial organizations of San Francisco and the East Bay cities are now working on the preliminary steps towards the construction of a bridge over San Francisco Bay. This has come about in the following way, writes Harlan D. Miller, C. E., in the Oakland Tribune. The Exposition drew to San Francisco engineers from all over the world and at the time of the International Engineering Congress there were more eminent engineers in San Francisco than had ever gathered together in one city before. At that time several of these visiting engineers, from prominent Eastern firms of consulting engineers, were impressed with the necessity for a bridge across the bay and many started independently studying on the problem. Each firm worked out a design for a bridge.

In January of this year all met together in Cleveland, Ohio, and by combining the best of each others' plans they perfected a design which was both efficient and economical and which had the very superior advantage of having been checked independently by three firms of engineers, a most unusual feature but one of great advantage in a bridge of this magnitude. Probably no such efficient process of checking of preliminary plans was ever done before.

In these studies for a bridge all of these engineers very soon learned that there was no reason whatever why a bridge could not be built and it seemed very strange that such progressive cities as San Francisco and Oakland should have been satisfied so long with such slow and inadequate transportation facilities between these two big centers.

At this meeting in Cleveland these engineers formed the Associated Bridge Engineers for the San Francisco-Oakland Bridge. The firms thus associated are Wilbur J. Watson & Company, consulting engineers, Cleveland, Ohio; William Russell Davis, consulting engineer, Albany, N. Y., and Harlan D. Miller, bridge engineer, New York City. Having perfected their plans they sent Harlan D. Miller of New York to San Francisco to present their plans to the people.

In considering the location for the bridge these different engineers had each independently decided upon the same route. Before deciding upon the site, however, all possible points of crossing the bay were considered, but the route chosen stands out conspicuously as the only feasible location.

Any bridge across the bay should properly be on the shortest line between the business centers of the two sides of the bay and that is exactly where the bridge has been located—that is, the shortest route between Third and Market streets, San Francisco, and the Oakland City Hall.

The bridge was not put in this location, however, primarily because it is the shortest route, but because the water is very shallow and the current is very small at the spot. The greatest depth of water is only 60 feet and the average depth is not half that. This is a very nominal depth for bridge work. The government records of currents and tide taken at the location of the bridge show that because of the wide expanse and the shallow water the currents never exceed three miles an hour. Such a current presents no difficulty whatever in the construction of the bridge piers.

Moreover, the location of the bridge is such that it comes into the San Francisco shore beyond the last important pier. Practically none of the

*This is the third plan devised in recent years for improving transportation facilities between San Francisco and the Bay Cities. The first scheme was suggested years ago by F. W. Fitzpatrick and provided for a tube or tunnel to be constructed under the bay. The second plan was outlined in this magazine in April, 1913, and provided for a suspension bridge along lines somewhat similar to the plan described herewith.

present shipping of the bay would have to pass the bridge. Of course, however, the bridge would be high enough to provide for all future shipping beyond it.

In studying the various routes the Goat Island route was quickly found to be impracticable for the following reasons: From an economical standpoint it would form an obstruction across the main entrance to the bay. It would require a long travel on the Oakland side to get to its starting point, as the terminal would be at Emeryville. The San Francisco terminal would be on Telegraph Hill, a long distance from the business and shopping center. It would be nearly two miles longer from center to center of cities than the route decided upon. Then, too, the point of landing in San Francisco was on a hill, which added to the difficulty of access for vehicles. It would require the government's consent to the use of Goat Island, which probably, in this day of preparedness, could never be obtained. One attempt at trying to get such a bill through the United States Congress had already failed. Also from an engineering standpoint the obstacles seem insurmountable. The very deepest part of the bay is between Goat Island and San Francisco, the bay being three times as deep at this point as at the location decided upon. This is a very important consideration, as the difficulty and expense of foundation work increases as the cube of the depth. Moreover, because of the narrowness of the channel the tide currents are so swift that even were a suitable foundation found at the bottom of the bay, which is unlikely, it would be almost impossible to build piers capable of supporting a bridge of a type that would be required by the War Department at that point and would necessitate engineering construction of a type which had never been attempted before, so that such a bridge could only be built at a tremendous cost. But even were the great obstacles overcome of getting the government's consent to the use of Goat Island and the War Department's approval of the location obtained and the great engineering difficulties overcome, it would be many years before the bridge could be completed and there are no advantages to offset these many and almost insurmountable disadvantages. So the route chosen stands out conspicuously as the only feasible location. By glancing at the accompanying plan it is seen that the bridge starts near the foot of Second street, San Francisco, and lands in Oakland at First and Adeline streets, crossing the Oakland estuary about half way out on the Alameda mole.

At the San Francisco end of the bridge the overland passenger trains would go directly down King street and back into a union terminal at Third and Townsend.

The suburban cars would enter a subway and go up Second street to Market to a subway loop at Market between Second and Third streets.

The approach to the bridge for vehicular traffic would start near Second and Brannan streets.

This point of landing for the San Francisco terminal has many distinct advantages, for by going up to Third and Market and making that the terminal for all suburban traffic it lands the people in the heart of the business and shopping district. Many people will not only be saved the time now required to get from the ferry building to their place of business, but they will be saved a car fare.

Also by having a large subway loop around several blocks with a dozen or more entrances in the heart of the city it will avoid the great and growing congestion at the ferry building and in lower Market street, as well as being of great convenience to the public.

By landing near the present Third and Townsend station the great ex-

pense of acquiring large new areas for terminals and yards is avoided and what new property is required for storage of trains, etc., can be secured at relatively small expense because the land values at this district are small.

At the Oakland terminal the bridge crosses the Oakland estuary with a long span bascule bridge at a very high elevation so that it will offer no obstruction to shipping. The location of this crossing over the estuary is such that it permits of long, easy grades on either side, so that the bridge can be placed at such a height that practically all shipping can pass underneath it. From the estuary the approach goes to First and Adeline streets along city property.

An important point which must be considered in a structure of this kind is the handling of the traveling public at a minimum of inconvenience to themselves during the construction of the bridge. The proposed route is ideal in this respect, for the entire structure could be completed without in any way interfering with the present traffic and when completed the suburban electric companies of the East Bay cities could divert their trains to the bridge without disarranging their present systems.

The trains for Alameda will leave the bridge at the point where it crosses the Alameda mole and there will be no change whatever in the suburban system of that city.

The Southern Pacific trains coming from Berkeley will all continue to pass the Oakland Sixteenth street station as at present, going directly to the bridge. The Southern Pacific Oakland trains would leave Seventh street at Adeline street and go straight to the approach to the bridge. All Key Route trains would go down Poplar street to the bridge instead of going out to Key Route mole. So a glance at the map shows that the location of the bridge is such that it in no way interferes with the present systems of either the Key Route or the Southern Pacific and that these companies can divert all of their trains over the bridge with practically no change.

The route decided upon was chosen because: The water is shallow; the currents are small; it is beyond present shipping of the bay; it is the shortest distance between the two business centers; a bridge can easily be built in this location which will meet the requirements of the War Department and provide all facilities for passing of ships. The San Francisco terminal, at Third and Market, is in the heart of the business section of the city. It would require no legislative action by the United States Government. The value of the land required in San Francisco for storage and terminals is relatively small. It would cause a minimum of interference and change in present suburban systems of the East Bay cities. It would relieve the present congestion at the foot of Market street. It would save time and a car fare in San Francisco for many of the passengers. It would greatly improve the facilities for handling overland passengers. It provides easy access at both terminals for all vehicular traffic. And, very importantly, a bridge could be built at this location for much less than at any other point and in less time.

If anyone is in doubt as to the benefits of such a bridge to the entire district, let him study conditions in other places where bridges have replaced ferries. Does anyone imagine that either New York or Brooklyn would now exist without the Brooklyn bridge or that they could find a single person in either New York or Brooklyn who would say that they would like to have the bridge removed?

Not only is that bridge a necessity to these cities, but they are building new bridges across the river as fast as they can, so that now they have four bridges.

Or can anyone imagine that the inhabitants on either side of the Mississippi river at St. Louis would consider for one minute the closing of the Eads bridge and going back to the slow and inadequate ferries?

The proposed San Francisco-Oakland bridge is similar to this bridge over the Mississippi river at St. Louis, because that was also a toll bridge and it quickly paid for itself in tolls collected. If the St. Louis bridge is used as an example, and it can be, because the conditions of travel are very similar and the same increase in traffic is assumed, the San Francisco-Oakland bridge would pay for itself in eight years.

If we take into consideration the fact that the people will be able to get an express train from the center of one city to the center of the other, leaving every two minutes, and thus avoid the delay often occasioned in waiting for the ferries, and at the same time realize that these trains will cross the bay at a speed of forty miles an hour and thus reduce the time between the cities by one-half, we can figure nearly one hour a day saved to the millions of people who cross the bay each year. The economic saving of time in one year, expressed in money value, would be from $15,000,000 to $20,000,000.

Any bridge built between San Francisco and the East Bay cities should be the property of the two counties; it should be in a sense similar to all other public highways of the State, built, controlled and maintained by the counties, differing from the public highway only in that a toll would be charged sufficient to maintain it.

The plans are for the two counties, jointly, to build the bridge and to charge a toll from the vehicular traffic and from the railroads for the privilege of using the bridge.

In the estimate given for revenue from the bridge, a charge of 30 cents is figured for each vehicle, irrespective of size or number of people carried, and a charge of $1.20 for each passenger coach and baggage car taken across the bridge by any railroad company. This is a conservative value, it being one-half the charge made by the railroads for hauling a car the same distance in New York State, and in this estimate no charge whatever is figured for empty cars.

The charge of 2.1 cents made to the railroads for each passenger carried across the bridge is based on the following figures taken from the sworn statement made by the Southern Pacific railroad to the California State Railroad Commission.

The average income to the railroad for every passenger carried across the bay is 7.9 cents, of which 3.1 cents is figured as earned by the ferryboats and 4.8 cents by the electric cars. The railroads could afford to let their ferries lie idle, buy the additional equipment necessary to continue their electric trains across the bay, and pay to the counties 2.1 cents and still receive the same income from their passenger business. That is, the railroads could pay the counties 2.1 cents for every passenger they carried across the bridge and not be the losers in any way—in fact, they would be the gainers.

The number of people crossing the bay each year is known exactly; it now averages nearly 130,000 a day.

The rate of increase is also known. From these figures it can be estimated almost positively the number of people that will be carried across the bay on the year the bridge is completed. It is an established fact that wherever better facilities for transportation are provided the traffic increases. A small percentage has been added to the estimate to allow for

this increase, but it will undoubtedly be much greater than has been estimated.

The total cost of the bridge will be from $20,000,000 to $22,000,000, depending upon the type of terminal chosen for San Francisco.

Due to the steady increase in traffic, there would be an increase in the income each year, so that in thirty years, if these tolls were maintained, the bridge would not only have paid for itself but it would have earned net for the counties over a hundred million dollars. But of course the bridge would be made a free bridge as soon as it had paid for itself. These figures show plainly that the traffic across the bay not only warrants the immediate construction of the bridge, but that it would be a paying proposition for the counties to consider it.

The bridge will have a capacity sufficient for many years to come. It will have two tracks for steam overland passenger trains, two tracks for electric trains, two separate roadways for slow moving vehicles, one in each direction, one wide specially designed boulevard-like roadway for automobiles only, and one sidewalk for pedestrians, which will be free, no toll being charged for those who wish to walk across the bridge. The bridge will be four and one-half miles long and could be completed within four years.

The very latest developments of engineering science have been used to make this bridge the finest ever planned.

Special attention has been given to the handling of the automobile traffic, the automobile boulevard being paved with the latest type of wood blocks, the approaches having low grades, wide, sweeping curves, etc.

The grades, the curves, the block signals, etc., for the railroad tracks have all been planned so as to allow the high speed which modern traffic conditions require.

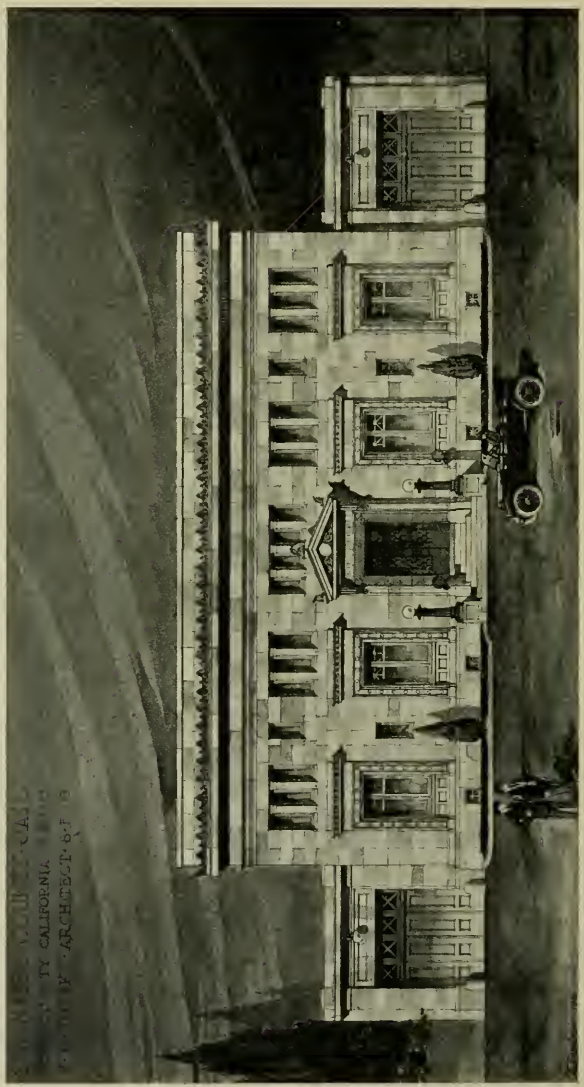
So that not only will this bridge be the largest bridge in the world, but it will be the finest, and will soon be known and talked about the world over. Such a structure is in keeping with the reputation of the bay cities for doing big things, bigger and better than has ever been done before.

* * *

The Profession of Landscape Architecture

Landscape architecture is primarily a fine art, and as such its most important function is to create and preserve beauty in the adaptation of land to human service, whether in cities or in the broader natural scenery of the country. In its relation to the location of buildings and the treatment of their surroundings it requires a familiarity with certain parts of the technical field of architecture; but its materials are mainly included within the fields of geology, forestry, horticulture, and civil engineering, to which it is related in much the same manner that architecture is related to structural engineering and other similar technical subjects.

With the widespread general realization of our need for beauty in land adapted to our use—beauty not merely as a luxury but as a practical necessity and as a matter of course—has come a constantly growing demand for men professionally trained in the production of this beauty. There is now in this country a greater opportunity than ever before for trained men as assistants in the offices of landscape architects, as park superintendents, city foresters, etc., and as landscape architects in private practice or public employ.



SAN MATEO COUNTY JAIL, REDWOOD CITY
WILLIAM H. TOEPKE, ARCHITECT

An American Versailles*

ON the north shore of Long Island, about four miles beyond the line of New York City, there is to be planted a home colony that is expected to be in many ways unique.

The promoters, to begin with, are all of them men affiliated with the arts—sculptors, painters, architects, illustrators and mural decorators of national repute, such men as Frederick MacMonnies, Robert Aitken, Paul W. Bartlett, Thomas Hastings, Jules Guerin, Owen Brainard, Penrhyn Stanlaws, Walter Russell, Edwin Blashfield and J. Alden Weir.

These men have associated with them a committee of financiers, have purchased some 186 acres of choice land fronting Manhasset Bay, have formed a company to be known as The Dominion of Versailles, and propose to lay out on the ground thus acquired one of the most elaborate and beautiful schemes of colony planning ever attempted in America.

"On July 15," said Walter Russell in discussing the project, "the engineering work will begin. Construction of the actual buildings will not be under way until fall."

Carrere & Hastings have made the designs for a colossal group of buildings almost as imposing as an international exposition in size. The ground rises from the shore of Manhasset Bay to wooded hills nearly 100 feet in height, about 1,000 yards from the water's edge.

All this space is to be laid out in formal gardens and parks like the famous gardens of Versailles, which the greatest of French gardeners, Vaux, created for "le Grand Monarch," Louis XIV, the richest and most magnificent King of France that ever lived.

The crest of the hill about half a mile from the water is to be crowned by a club house with ball rooms, dining rooms, restaurants that will seat comfortably 2,000 persons, tea rooms, swimming pools, squash courts, etc.

All the cottages and private gardens of the Dominion will be laid out as separate, harmonious units of the whole scheme of architecture and landscape gardening, so that from whatever point the colony is seen, whether from Manhasset Bay, the terraces of the club house, the porches of the individual cottages, or the windows of any of the private residences, the sweeping view will be one of harmony and symmetry and inspiring beauty.

The grounds of the Dominion of Versailles, as it is called, are about 180 acres in extent. The natural beauty of the location is pronounced far superior to that of the French Versailles. The chateau of Louis XIV stands on a level plain. The land on which the new Versailles is to be built slopes gently upward from the sound to a plateau about 150 feet above the water. The main building will be erected on the summit of this elevation, the highest portion of the grounds. It will not be a copy of the Chateau de Versailles in France, but an American adaptation of it. The aim will be to retain all the stately splendor and beauty of the ancient structure and the lessons of the past will be applied to the needs and conditions of the present and future.

It is planned to make the gardens of this new Versailles even more beautiful than those which surround the famous palace of Louis XIV. Their layout follows to a certain extent the natural formation of the ground and is divided into three main parts. The first is that which lies between the water front and the public road which crosses the property. In this will be

*A contemporary remarks that the vision of this Long Island Versailles was suggested by the late Panama-Pacific Exposition. There is not the least doubt that such is the case. If there is any skepticism on that point it will be removed by a study of the names of the artists who will have a part in its decoration. The most of them were made familiar to us during the course of the 1915 Fair.—Editor

the approach to the club houses and a large playground for children, at the lower end of which will be a big swimming pool.

The chateau will be just half a mile distant from the water front. It will be 1,200 feet in length, or nearly equal to the extent of five north and south blocks in New York City.

The exterior has been designed both in relation to its appearance from the gardens and its effect when viewed from a distance. This idea will be carried out in making the long front portions of the building comparatively low and quite simple, keeping the spirit of the old chateau of Versailles, while the rear portion will be higher, culminating in two towers, each about 375 feet in height. In the lower portions of the chateau the average height will be eight stories; elsewhere, exclusive of the towers, the average will be sixteen stories.

The great entrance hall will be the first striking feature on entering the chateau. Two splendid stairways will lead from this. One, the "king's stairway," as it is called in old Versailles, will be monumental in its sweep and breadth and will lead to the second floor. The other will descend to the grand ball room, which will occupy the central court of the building.

This American Versailles is intended to combine the exclusiveness and privacy of a home with the pleasures and advantages of social life. It will be town and country in one, with none of the discomforts and annoyances of either. The Dominion of Versailles will contain the comforts and luxuries of modern life that even a king could not buy in the days of Louis XIV. It will be the most regal thing in America, but one need not be a king or a millionaire to live there, its promoters say.

There will be a club house and other facilities for entertainment exclusively for the use of employees of Versailles. Persons living in the chateau may have their own servants or they can employ such as they wish at any time, for an hour or a day or a week, from the regular staff that will be maintained for that purpose.

At the water front, facing a great green mall, will be the buildings of the Versailles Club. The two sections will average about four stories in height and will contain about 1,000 rooms in suites of parlor, bedroom and bath for the use of club members and their families. The club will be like an exclusive family hotel, and the club members will enjoy practically the same privileges as the owners of space in the chateau itself.

Among the other buildings which are part of the general plan of the Dominion of Versailles are a casino and a yacht club house. An artificial harbor will be constructed. At the ends of the breakwaters will be triumphal columns. The bathing beach will be inside these breakwaters, with facilities for sea bathing at night by means of under water illumination.

The architecture of the Versailles Club, the casino and the yacht club will recall that of the Petit Trianon.

Sounds like a dream culled from the Arabian Nights, comments a writer. But listen to one of the foremost of American architects, Mr. Thomas Hastings, who is to do the designing and who is one of the principals in the enterprise:

"Versailles is the biggest thing I have ever undertaken. There is nothing that I know of that is so big. When anything like this has been done before it has been done for royalty. This is a home—a combination of a lot of individual homes.

"I expect Versailles to be the greatest work of my career. It is the most interesting thing I have ever had to do. It is like the Prix de Rome, with the added interest that it is going to be executed.

"If the chateau of this American Versailles is not the biggest thing in the world, it will be the biggest architectural feature or mass in America. To answer its splendid purpose it must be something between a great building and a small town. It must harmonize with the country and country life and be thoroughly home-like in character. From the architect's point of view it is an entirely new and modern problem.

"To illustrate my meaning, let me say that the average American town is forlorn, because it is scattered all over in spots that have no relation to each other. The effect is not beautiful. There is no landscape and no town. In Versailles we shall concentrate the town—as the great chateau might be called—and have plenty of room for country landscape, as in ancient and beautiful towns of Southern and Eastern Europe.

"The land where Versailles is to be built lends itself to the solution of the problem better than any other location that I know of near New York. To my mind, Versailles is as much a study of real architectural landscape as of architecture. The chateau will be a beautiful structure that will fit into a beautiful environment.

"While at the beginning I was awed by the size and splendor of the project, the more I studied and the more I looked into possibilities of financing it the more I became convinced that it was practical and possible.

"My architectural conception of Versailles is not as a hotel or apartment house on a vast scale. It is a place where a man can have the quiet and seclusion of his own country home surrounded by an infinitely greater amount of beauty and variety of landscape than would be possible in any other way. Versailles will be an ideal combination of convenience and beauty—the country at the door of the town. There is nothing like it in all the world."

Owen Brainard, of Carrere & Hastings, has charge of all the engineering work. Frederick MacMonnies, Paul Bartlett and Robert Aitken, sculptors, will create the three largest fountains. They will also act as the committee in control of the many sculptural features. J. Alden Weir, president of the National Academy; Edwin H. Blashfield, Frank V. Dumond, Maxfield Parrish and Jules Guerin will have charge of all mural and interior decorations.

Frederick MacMonnies declared Versailles will mean a new birth of art in America. He said:

"It will be the one great demonstration here of the true spirit and real love of art. Americans who have traveled abroad with unseeing eyes have an idea that art is something that should be kept for people to look at on Sundays and holidays. They have no knowledge of its application.

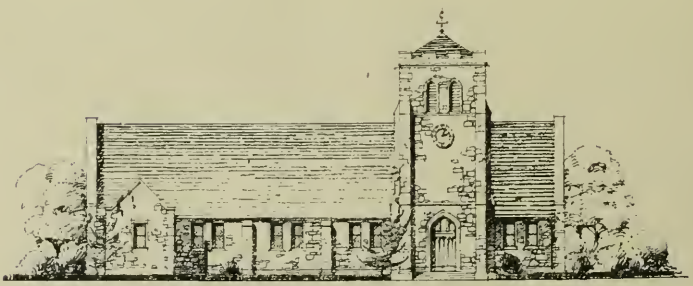
"Versailles will give them a knowledge of the application of art to the needs of every-day life."

Paul Bartlett said:

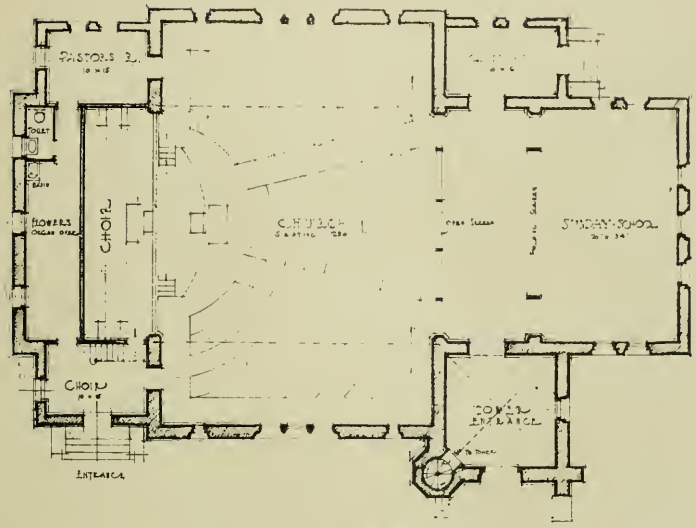
"The creators of this great enterprise are actually accomplishing, as business men, the things that Louis XIV did as a king. But they are doing it through the culmination of co-operation, which is greater than kingly power. Every century has developed a beauty of its own. The new Versailles will be the greatest milestone in American art."

So that the new Versailles, it will be seen, is not a dream, but a practical twentieth century actuality, pregnant with big things for the future of American art and backed by men in every way competent to endow it with the beauty that should go hand in hand with a project of such extraordinary magnitude and magnificence.

ACCEPTED DESIGN, FRONT ELEVATION, BALDWIN MEMORIAL CHURCH
C. W. Dickey, Architect



PRELIMINARY STUDY, BALDWIN MEMORIAL CHURCH
C. W. Dickey, Architect

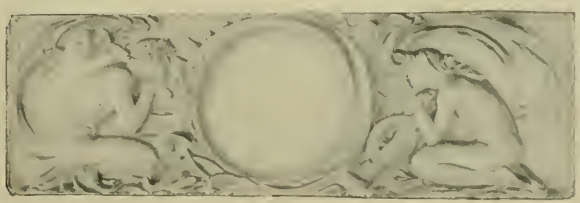


FLOOR PLAN, BALDWIN MEMORIAL CHURCH
C. W. Dickey, Architect

Baldwin Memorial Church, Hawaiian Territory

The accompanying plates show the approved sketches for the Baldwin Memorial Church to be erected at Paia, Maui, T. H., C. W. Dickey of Oakland, architect.

In addition to the accepted plan and elevation, the preliminary studies that led up to this design are shown. The edifice is being erected as a memorial to the late Henry P. Baldwin by his widow and children. It will be constructed of rough beaten and lichen covered field stone, backed with reinforced concrete. This stone will be secured in the vicinity of the church. The roof will be of graduated and variegated Connecticut slate. The interior will be finished in quartered oak and plaster. There will be a new pipe organ.



Relation of Sculpture to Architecture

IT is only in comparatively recent years, says Stone, that we in America have any extended use of sculpture in architecture. Even during the period when we were tempted to too great a profusion of ornamentation, this took the form of mouldings and carvings, and not of sculpture proper. For thousands of years churches, and even pagan temples, in the old world, made statuary the principal part of the exterior ornamentation. Perhaps it was the Puritan influence that prevented this custom from gaining headway in this country. To this day there is less architectural sculpture in our churches than in many other classes of buildings. But there has certainly been a constant and larger demand during the past few decades for sculpture as an adjunct to architecture. Not only are statues to be found on many of our important public buildings, in New York, for instance, on the Custom House, the Appellate Court, and the Hall of Records, but they are also given a place on great business buildings, banks, exchanges, mercantile houses and the like. A large proportion of the work is distinctly good, and some of it is of the highest artistic excellence. It has done much to dignify our architecture and to develop public taste.

A very admirable and suggestive discussion of the relation of sculpture to architecture is given in the Architect and Contract Reporter of London:

"One of the most satisfactory indications of vitality in our modern architecture is the increasing frequency of employment of sculpture as a component of the design of our buildings, even in those that are regulated in their cost of construction by the necessity of paying a dividend," says the writer. "At the present day it is not merely our public buildings, our palaces, our churches, our museums that we see adorned by sculpture, but our office buildings and other commercial structures, the architects of which do not hesitate to add by the cost of sculpture to the ground rent and capital expenditure on which a return has to be obtained. In the ultimate consideration this means that the public, who pay the rents, are willing to pay the necessarily higher rent that is required to defray the cost and yield a percentage of profit on the increased expenditure.

"We are still, however, in this country, in the unfortunate position that the sculpture and the architecture of our buildings are, too often, not closely co-ordinated and integral components of the design, but stand in the relation of distinct entities, of which the one is applied to the other as decoration or ornament. We are still far from attaining the level of Phidias and the French figure carvers of the thirteenth century, whose sculpture was as essentially a part of the buildings on which it appeared as the mouldings and purely architectural forms.

"The reason for our present failure to attain this level is, undoubtedly, due to the divorce between architecture and sculpture which has come about, so that they are regarded and practised as separate arts, rather than branches of one art. It is, possibly, vain to hope that we may revert to the conditions of artistic life in Greece, in thirteenth-century France, in Italy of the Renaissance era, when sculptor and architect were one and the same individual. Our only hope now lies in a more intimate association in their early training, as in their mature life, of art students who specialize in one or other branches, and in a more extended study of art in all its forms by every student and practitioner. No longer must architecture, sculpture and painting be locked up in water-tight compartments, but some knowledge of all must be imparted to and acquired by the workers in each.

"Every embryo architect should be trained to understand the language of sculpture and of painting, although he may not be able to express himself with freedom and facility in their peculiar idiom. So, too, the sculptor should learn so much of architecture as may enable him to execute his own work in consonance and harmony with the building of which his productions will form a part.

"The effect of a building or a monument upon the beholder—and we are speaking now of the Philistine, of the man who does not understand or comprehend the technique of the art upon which he looks—depends primarily upon the harmony of its constituent parts. Just as there are thousands who, without any skilled knowledge of music, receive in their enjoyment of a well-composed and well-played piece a shock from an accidental error of the executant or an unresolved ninth of the composer, so the ordinary layman, in his contemplation of a building, will, without comprehending the reason, experience a feeling of uneasiness when architecture and sculpture are discordant.

"We who are practitioners of art, in our criticism of work before us, whether silent or expressed, are prone to analyze the technical faults, whether of design or execution, of that which displeases us, so that we are apt to ignore the standpoint of those who cannot follow us in our perception of technical deficiencies and to assume the incompetence of the Philistine, who can give no other reason for his pleasure or displeasure than 'I know what I like.' But if there is any reality in art expression at all it must affect the unlearned as well as the cognoscenti. Hence, if plastic forms are in future to be allowed, by those who pay, as part of the detail of buildings, it is of vital importance that architecture and sculpture should be harmonious.

"Although it may, at first sight, appear that there is a difference in essence between the sculpture of those structures of which it is the predominant part, as in what we ordinarily call monuments, and that which forms the decoration or ornament of a building, yet in each class it is equally important that both architecture and sculpture should speak in the same key. On the one hand, the dominant sculpturesque forms should not be considered all-important, and the architectural details of the pedestal or other support a matter of complete indifference; and, on the other hand, a building should not be regarded as a mere frame of which certain spaces are to be occupied by sculpture that may take any form that its creator pleases so long as it adequately fills the space allotted to it.

"There may well be some difference in the treatment of sculpture which forms, as it were, an integral part of a building, as, for example, a keystone, a seandril, or a panel in a wall surface, and that which may be regarded as applied decoration, such as crowning figures upon a sky-line or detached groups of figures, supported by structural features or with the architecture as a background.

"It is perhaps in the use of sculpture as what we have termed applied decoration that dissonance with the associated architecture is most prevalent. The sculptor seems to feel that he is more free to do as he pleases when his work is no longer rigidly framed by the lines of architectural forms, but, in a sense, is detached and stands alone. The most glaring defect that is apt to develop is want of scale. The plastic forms are often too large or too small for their supporting architectural features, most usually the latter. Giant orders are crowned by exiguous single figures, whose actual as well as expressive burden is a mere featherweight compared to

the structural load which similar components of the architecture support.

"We venture to think that it is at least questionable whether a single figure should ever be the crowning load of a single column with its entablature. The lines of the column dictate the extreme breadth of the figure and its accessories, whilst the lines of the entablature connecting with the walls of the building emphasize and to some extent exaggerate the supporting power. Hence, too frequently, the load is disproportionate to the support. This view is in no way at variance with the use of a columnar form as a support to a figure in an isolated monument, in all the successful examples of which the entablature is absent.

"The other faults to which sculpture as applied decoration is most liable are incongruity of expression, as between delicacy and force, and harsh clashing of line. The latter is especially probable if the sculpture is far detached from the main structure, so that other parts besides those immediately connected are conjoined in the view. The finest examples of harmony of line between sculpture and architecture that the world has seen are probably to be found in the thirteenth-century cathedrals of France, and these should be the subject of study by every sculptor who purposes the exercise of his craft in connection with architecture."

*
* *

Some Reasons and Remedies for Defective Plastering

Builders often wonder why shrinkage checks and cracks appear in wall plaster. There are different reasons that might be given for this—plasterers are sometimes guilty of making their plastering mixtures too rich, the old guessed-at proportion of three of sand to one of lime or cement is quite unnecessary with the high-grade mixtures that are in use today. Five or six or even seven to one gives a density which dries out more perfectly and causes no shrinkage after setting has taken place. The old proportion, being too rich, causes shrinkage cracks which admit moisture, which, on the action of frost, enlarges the checks and destroys the work. Even when there is no weather exposure, moisture and variation in temperature will soon enlarge small checks to unsightly proportions.

Another cause of checking or cracking is the lath, which may affect the plaster in several ways. If the lath is too dry when the plaster is applied, it absorbs water, which, together with that which evaporates in dry weather, does not leave sufficient moisture for crystallization. This may be overcome by dampening the lath before commencing to plaster, enclosing the room to reduce the ventilation, so that evaporation will not take place so rapidly. A great deal of trouble in plastering is due to lath expanding or buckling by the additional moisture from the plaster. This is overcome by proper nailing of the lath, leaving a space between the ends to allow for expansion and securely nailing to intermediate studding. Also the lath, for best results, should be uniformly spaced and of uniformly graded wood. Green lath, or lath with bark on, should never be used alongside of lath properly seasoned.

Lathing and improper mixing are the causes of most difficulties seen in hard wall plaster. Use a little more care in the selection and nailing of the lath—a trade which too many men nowadays try to see how quickly can be done, rather than how well it can be done. Also use leaner mixtures and most of these difficulties can be done away with.—Contract Record.

Lumber Specifications—Why Not?

THROUGH a co-operative arrangement on lumber specifications and the branding of timber, the Illinois Society of Architects and the manufacturers of Southern pine lumber have taken one of the most important steps in the history of building, for the improvement of the quality of future buildings in Chicago and Illinois—a step that might well be followed by architectural societies and lumber associations on the Pacific Coast.

The adoption of technical specifications for the lumber to be used in buildings will, through the co-operation of the manufacturer in branding his timber, in future give owners of buildings an assurance never before possible that his new structure will be fitted to stand the requirements of his industry, and will, when the specifications of architects are properly prepared, guarantee that the building will be erected with the proper quality of material.

The arrangement is of particular importance to Chicago, as it is in the metropolitan district that strict specifications for building are most necessary. It is likely, however, that the Illinois action will be taken as a national standard for building codes, and mark a new era in the forcing of proper construction of business buildings, as well as residences.

In the words of the lumbermen, the lumber producers in this case aim to make every timber they ship a promissory note, and the Illinois architects are anxious to accept this style of security in their model building specifications.

The nature of the specifications is extremely technical. When the architect wants a specific quality of lumber for a building, for instance, requiring maximum durability and strength, he will specify the use of timber of a special grade, and the manufacturer's brand on this timber will guarantee to the architect that he is giving his client an adequate quality of timber.

The specifications are of interest to owners of buildings, for they will prevent the substitution of inferior lumber.

Frank E. Davidson, president of the Illinois Society of Architects, was largely active in completing the specifications, through committees which have been in conference with lumber authorities repeatedly during the last few weeks. At one notable conference in the Union League Club, secretaries of lumber manufacturing organizations from every part of the country except the Pacific Coast came to Chicago to confer with the architects, to assure the architects that the manufacturers were anxious to have buildings erected in Chicago properly constructed of the proper quality of wood, and offered their aid in removing abuses due to use of inferior wood by agreeing to arrange for the branding of lumber for use in this city.

The form of specifications adopted by the Illinois Society of Architects follows:

For Southern Yellow Pine Structural Timbers.

(1) When both maximum durability and strength are required.

Longleaf Southern yellow pine of "select structural material" grade in accordance with the definition of "Dense Southern Yellow Pine," as adopted by the American Society for Testing Materials (August, 1915), and the Southern Pine Association ("Density Rule" book, March 15, 1916). To be dressed to standard sizes conforming to the rules of the Southern Pine Association and branded in accordance with the official requirements of that association.

(2) When strength is required without special reference to durability.

Southern yellow pine of "select structural material" grade, as defined in section (1) above. To be dressed to standard sizes conforming to the rules of the Southern

Pine Association and branded in accordance with the official requirements of that association.

(3) When used without reference to durability or maximum strength.

No. 1 common Southern yellow pine timbers of "dense" grade, as defined in the "Timber Rule" book of the Southern Pine Association (March 15, 1916). To be dressed to standard sizes conforming to the rules of the Southern Pine Association.

(4) When used for joists, studs, etc., in ordinary or minor structures without reference to durability or maximum strength.

No. 1 common Southern yellow pine, as defined in the "Timber Rule" book of the Southern Pine Association (March 15, 1916). To be dressed to standard sizes conforming to the rules of that association.

For Southern Yellow Pine Heavy Factory and Laminated Flooring.

(5) When durability and maximum strength are required.

"Dense" Southern yellow pine of "merchantable grade" as defined in the "Timber Rule" book of the Southern Pine Association (March 15, 1916). To be dressed to standard sizes conforming to the rules of that association and branded in accordance with the official requirements of that association.

(6) When strength is required without reference to durability.

Southern yellow pine of "No. 1 common timbers," as defined in the "Timber Rule" book of the Southern Pine Association (March 15, 1916). To be dressed to standard sizes conforming to the rules of that association.

Note.—In lieu of the branding of timber above specified, the contractor may, at his option, arrange to have all material furnished under this specification inspected by the inspection department of the Southern Pine Association, in which event the contractor shall furnish and deliver to the architect a certificate showing that all material delivered complies with the architect's specifications. The entire expense of said inspection must be paid by the contractor.

Reinspection.

Should the architect demand that any material delivered be reinspected, the said inspection shall be made by the official inspectors of the inspection bureau of the Southern Pine Association. Should 95 per cent or more of the material inspected be approved as complying with the grade specified, the inspection fee shall be paid by the owner. Should 5 per cent or more of the material inspected be rejected by the said inspector as not complying with said grading rules, all inspection fees shall be paid by the contractor.

* * *

The Future of the "Skyscraper"

The uncertainty of land values in New York City will have a tendency to discourage the erection of high buildings, said Prof. Chas. Peck Warren, assistant professor of architecture at Columbia University, in the New York Times. Hitherto the tendency of values has been almost uniformly upward, but in the last few years there has been in some quarters, notably in the Broadway section above the City Hall and in lower Fifth avenue, a tendency in the opposite direction. Who can foretell with any certainty the effect of the future subways and tunnels upon land values? Suppose the vast outlying area should be developed for manufacturing purposes, of what use would be the loft building?

A skyscraper is not necessarily a money-making investment. The majority bring less returns than many other forms of investment, and some of them actually lose money. It is a sad commentary on the life of a skyscraper that the first, the Tower building, 52 Broadway, erected in 1888, was torn down in 1913. Why? Because it did not pay, and on its site is being erected a low arcade stone structure equivalent in height to the average four-story building.

Can Natural Cement "Come Back"?

THIS question is raised by one of the great natural cement manufacturers, whose evident purpose is to make answer in the affirmative.

Utica cement was first put on the market in 1838—almost eighty years ago, and numberless structures built is those early days bear witness to the durable quality of that cement. On its durability there can be no question. What, then, has led to the decreased use of natural cement during the past fifteen years? Probably the drop in price of Portland cement has been the main reason, but also there has developed among engineers a tendency to select the strongest cement regardless of price.

For reinforced concrete work a very strong cement is essential, but there are many kinds of engineering structures where strength sufficient to carry but little more than their own weight is all that is needed. Retaining walls, dams, sewers, pavement bases and building foundations fall within this class. For all such structures cost per cubic yard of masonry of only moderate strength and of sufficient density is the only criterion that should be applied. Yet without doubt the cement for most of that sort of work is specified without adequate study of unit costs, says Engineering-Contracting.

To give a good illustration, take a base for brick or asphalt pavement. It is known to most highway engineers that some of the best pavements of those types have been laid on old macadam. It is also known that macadam has very slight strength—tensile, transverse or compressive—yet sufficient for the purpose of distributing wheel loads over the subsoil. Natural cement concrete, even when very lean in cement, has far greater strength than macadam. Hence it follows that a cheap yet sufficiently strong and dense pavement base can be made with natural cement wherever freight charges on the cement are not high. The same holds of nearly all classes of foundations.

Retaining walls and dams of massive design are extensively used, and there, too, it is known that density and mass, not strength, are the desiderata. Hence the designer of such structures should aim to get the desired mass at the least possible cost. In the case of some retaining walls this has been accomplished by the use of "dry rubble," rubble containing no mortar at all. In the case of some dams—the "rockfill" type—no mortar whatever has been used in the body of the dam. Those are extreme types of masonry, but they serve admirably to illustrate our point, namely, that **strength is not the criterion by which all types of masonry should be judged.**

To make masonry waterproof one of the most effective ways is to use a superabundance of hydraulic cement, so as to insure perfect filling of the voids in the sand. But a 1 to 1 or 1 to 1.5 mixture of cement and sand is expensive where a high priced cement is used. Is not the answer to be found in many cases by using low priced cement for such rich mixtures? Did not the early engineers use better judgment than those who today use rich mixtures of higher priced cement?

If natural cement is to "come back" it must be because with it there can be secured either greater density or the desired mass at less unit cost than with Portland cement. We deem it important in this connection, therefore, to point out that for many kinds of engineering structures either density or mass is the chief desideratum and not strength.

Characteristics Required of Concrete to Resist Action of Sea Water*

By W. WALTERS PAGON.

IN order to construct concrete that will have the greatest resistive power against the action of sea water (and also probably of alkali waters) it must possess the following characteristics:

1. The addition of puzzolan in some form is widely practiced in Europe and appears to be theoretically correct. It has not been tried in America, to the author's knowledge, but is worth an exhaustive test. The amount should not be over one part for each part of cement, nor less than one-half part.

2. Waterproofing with substances that combine chemically with the free lime ought to be successful and is worth testing.

3. Between extreme high and low tides the concrete surfaces should be faced continuously, without joints, with about 3 inches of 1 :1½ or 1 :2 mortar, made with sand as specified below, well cured before coming in contact with the sea water. Facing must be placed simultaneously with the backing.

4. The cement should be low in lime and alumina and contain as little gypsum as possible.

5. Sand must be silicious, uniformly graded from fine to coarse, with not less than 50 per cent nor more than 70 per cent passing through a No. 20 sieve, and not more than 3 per cent passing a No. 100 sieve, and must have no organic matter coating the grains. It must be free from roots and easily disintegrated grains, such as feldspar, shells, limestone, mica, etc. It should be washed free from clay, and should show a tensile strength for 1 :3 specimens not less than the following percentages of the strength of Standard Ottawa sand of the same consistency, using the brand of cement that is to be used on the work:

Age.	Percentage strength.
1 day	85
3 days	90
7 days	95
28 days	100

6. Where concrete must be exposed to sea water without mortar facing gravel should not be used. Broken stone should be hard, durable trap, granite or other dense, hard, insoluble stone. It should not exceed ¾ inch in size and should be free from crusher dust, sand, dirt, organic matter or other foreign substances. Mixture should be 1 :1½ :3 or 1 :2 :4, or should be proportioned for maximum density.

7. Pure, fresh water should be used in sufficient quantity to permit the materials to be well puddled and spaded, so that no later surface treatment or patching will be required, but not sufficient to materially retard the setting of the cement. Care must be exercised, however, to prevent the formation of laitance or pockets of neat cement or very rich mortar.

8. Forms should be tight to prevent leakage of cement or, where concrete must be submerged immediately, to prevent contact with the sea water.

9. Facing should be reinforced with steel well covered with mortar and securely anchored to the backing.

*Extract from a report submitted to J. E. Greiner and printed in the Journal of the Engineers' Club of Baltimore.

10. No surface treatment should be given.

11. The work should be allowed to harden two weeks, if possible, before coming in contact with sea water. Two months is better.

12. Sea water work should never be done in cold weather, with temperature below 40 degrees F.

13. Where possible pre-cast, mortar faced blocks cured in damp sand for at least one month should be used. Facing should extend back at the joints to prevent saturation of the backing. The joints should be pointed with 1:1 mortar of coarse sand.

14. The most durable surface will be obtained if granite or other dense stone be used as facing. This should not be less than 6 inches thick, anchored back with wrought iron clamps, and pointed with 1:1 mortar of coarse sand and cement as noted above.

15. On mortar or concrete surfaces the growth of barnacles, moss, etc., will frequently afford protection.

All of the foregoing can be summarized into these statements:

Use materials that cannot be attacked by the sea water salts.

Mix these so as to obtain the maximum density.

Have no stones near surface of concrete, but use mortar face 3 inches thick.

* * *

Some Impertinences the Architect Must Endure

A RECENT issue of Building Age contained some amusing paragraphs by W. Livingston Larned. They are not exaggerations—in fact, they are extremely mild examples of what architects are frequently called upon to endure. To quote:

"We have heard so much of 'Rooms with Southern Exposure.' Everybody seems to agree that they are preferable. Can't you arrange to have all of ours that way?"

* * *

"If it is possible, we would like to have the guest room, wherever you put it, so arranged that we can turn it into a nursery or a conservatory, or something like that, in case the guests don't come, you know."

* * *

"So this is the first floor plan and this is the second? How funny! They look very much the same. You know what I mean—with rooms and things and all drawn in those peculiar straight lines. How can you ever tell them apart?"

* * *

"Oh, dear, you architects are all alike. I was just looking over the list and you've gone and made us buy fifteen door knobs. I don't believe a house has that many doors. Try and be economical, now, won't you?"

* * *

"You have forgotten the most important thing. Why—why did you? There was to be a push button under the dining room table so that all I have to do is push and the servant comes in. It makes one's guests so curious."

* * *

"You only have one old-fashioned fireplace. We wanted one in each of the rooms, and perhaps two in the big living room, in case my mother comes to stay with us. And the fire-dogs—you've left those out entirely."

"Now, don't try to fool us. I had a grandfather who was in the building business and he told me lots and lots of things. There would be room for a large closet right under the stairs."

* * *

"What's that—you call this a 'perspective drawing'? I suppose that's some fancy, highfalootin' name that will make it cost about three or four times as much as it really should."

* * *

"Couldn't you throw in a greenhouse and a pergola and a walk down to the pigeon-house, without it costing us anything extra? It seems to me that when folks give you a whole house to draw, you could do those little things—just as a favor and to show your appreciation. It would only take you a minute."

* * *

"In your floor plan you don't show any tiles in the bath room. I never heard of such a thing. I might as well tell you—frankly—your plans look terribly bare to me."

* * *

French Plan to Rebuild their Cities

"THE RECONSTRUCTED CITY" is the name of the world's exposition which began in Paris, France, May 15, and will continue for four months. Back of this exposition is a story showing that, with all Germany's wonderful efficiency, the French are showing an equal amount of foresight. "The Reconstructed City" is a French national exposition to teach, even at this early date, how to rebuild the war-wrecked portions of northern France when the war is ended. That the French government is already planning on an entire reconstruction of the cities destroyed by the movements of armies back and forth across the northern provinces is evidence of foresight of an unusual type.

It is to be a French exposition entirely, and America's part has been only the sending by lumber manufacturers of an exhibit showing the possibilities of American timber in this work of reconstruction.

"The Reconstructed City" is in several sections, different parts of the exposition being devoted to such departments as road-building, city planning, city residence construction, city industrial buildings, and rural work. In some cases the city planning department will work for an entire reconstruction on entirely new lines of the cities which have been wrecked by bombardment. In other cases only building construction along the old streets will be required. The road work will be important, also, for shells have raised havoc with the famous highways of northern France. Ruined farms will be no small part of the problem of reconstruction.

The Southern Pine Association, through its European agent, learned of the projected exposition and was able to get an exhibit, not only of southern building types, but of typical American structural work, on the last ship leaving New Orleans before the exposition. The American lumbermen have a series of models of buildings, for city and farm, including a small mill construction building, for industrial purposes, and models particularly of farm buildings, such as an ideal barn, swine house, poultry house and granary.

Will Steel Be Any Cheaper?

IS it advisable to postpone building operations in the hope that steel will be lower in price later on? This is the big question that is having the serious consideration of architects and owners throughout the country. A study and understanding of the present steel situation are of vital importance to everyone connected with the building world.

What are the conditions in the steel industry today? What are the prospects for the future? The steel mills are running maximum capacity and yet are unable to cope with the demands. Every report from the steel companies indicates record business with increasing volume of unfilled orders. We are informed that practically all the mills are booked with orders which will keep them busy well into 1917, and yet their regular customers are clamoring for the privilege of entering more orders.

In our own country business conditions have never been better. Our foreign trade for months has been surpassing all records. Our exports for twelve months ending February, 1916, are reported to have been $3,720,000,000. Money is plentiful and new building construction can be readily financed. What does it matter if a new building does cost slightly more than it would in dull times? The new building is rented almost before it is completed and at attractive rentals. The savings which might be made in dull times would be readily consumed in loss in rentals. It is useless to postpone construction, as there is no prospect of lower cost for some time to come and in the meantime the interest charges and taxes on vacant property continue to accumulate.

Supposing the war were to stop, what then? Records show that although the war has been a powerful stimulus in our present business conditions not over 25 per cent of the present activities are represented by war supplies. It will take months for European industries to properly organize their manufacturing, and the steel mills abroad will be busy for years afterwards in supplying their own needs and repairing the enormous damage done by the war. A single bridge crossing any one of the important streams requires thousands of tons of steel. Steel ships in great number have been destroyed and must be replaced. Building activity abroad has been at a standstill and must be resumed as soon as the war ceases. These conditions point clearly to the fact that for a long period after the war there will be no European manufacturer able to export steel to America or any other country. In the meantime our steel manufacturers will not only have to take care of their domestic trade but will also be compelled to export to South America and many other countries.

Remember also that the uses for steel are increasing enormously. Articles which formerly were made of wood and other materials are now furnished in steel. The automobile industry alone consumes millions of tons. New uses are being brought forward every day; besides there is the normal increased demand for steel. Our own government has already started its program of preparedness. This will consume large quantities of steel for ships, guns, coast defense, ammunition, etc. Our railroads simply must expand as well as take care of replacements. This means tremendous tonnages of steel for new cars, rails, bridges, etc.—Modern Building.

Fuller Details in Specifications

By OWEN W. SMITH, C. E.

MUCH has been written and spoken about plans of structures, with all their accompanying detail, but little has been said or discussed about specifications, which all know go hand-in-hand with all plans, and in contract work is one of the written documents of the contract ranking next in importance to the plans.

The chief duties of the specification are these: To define or describe the work so that any competent contractor may submit an intelligent bid, and to establish a guide and a standard by which the contract may be interpreted with fairness to each party.

To attain the first of these desired results, great attention should be given to accurately and clearly describe what is desired to be done and the existing conditions under which it is to be constructed.

A complete specification, in conjunction with the plans, should indicate clearly, concisely and accurately all the details of the structure; the class of materials to be used, what is to be supplied by the contractor, and by the corporation, and in the case of corporation supplies, where these are to be delivered. Also the local conditions, such as the conditions of the sub-strata on which foundations are to be placed, flood conditions, where they affect the work, should be fully described, and any other matter which might affect an intelligent bid one way or another.

It is not sufficient that the engineer or architect should merely indicate by the plans and specifications the type and character of the structure to be built. Usually he has a great many advantages in planning an enterprise over those enjoyed by the contractor. Generally he is not limited in the time taken in drawing his plans and drafting his specifications; and has, or should have, ample time to investigate all conditions and make researches prior to the time when bids are called. No structure or work should be designed without a full knowledge of local conditions.

We often find, however, that the bidder is not given any information about local conditions, even when it is in the possession of the designer, and he is left to shift for himself and get, as well as he can, the information which has a most important bearing on the ultimate cost of the work.

The time allotted to the contractor is often too short to admit of anything but a brief survey of conditions, and he has to practically guess about conditions, which are of vital importance to all concerned. Hence we often find, as a result of lack of this information, a great range in the amounts bid, a wiser and sadder contractor, and a worried and disgusted engineer. Further, it is the duty of engineers or writers of specifications to provide positive information of local conditions pertaining to the work, above ground and below.

Is it not sufficient to ask bidders to spend their time and money in obtaining that information which is solely within the province of the contractor, and supplying the required security, without putting them to the necessity of gathering data which is within the province of the engineer to do so?

In this connection the point of view of many architects appears to be that they confer a favor in handing plans and specifications to a contractor for bidding purposes. Money deposits are often required before these can be obtained, and frequently they are not permitted to take them from the

office, and requests to have them sent by mail are refused. It is hard to see how the contractor is under any obligation in an effort to bid on work, as these efforts will require both time and money to accomplish, and with every prospect, on the average, of the contractor being out of pocket.

Viewed from a business standpoint, competition is the life of trade, in these matters as in others, and the architect's duty to his employers or client would be to facilitate in every way the interest of all prospective competent bidders.

Under this heading it will be proper to discuss briefly the actual wording of specifications before passing on to the next phase.

Clearness, brevity and consistency are the three things to be attained in the wording of a specification. Lengthy sentences of necessity become involved, and reiteration of descriptions of similar works and materials does not add strength to the document. Tautology is to be avoided if possible. Words such as "proper" and "sufficient," being indefinite, have little meaning, and the writer should avoid them by stating clearly what is proper and sufficient.

Stock clauses, or standard specifications to apply to different classes of work, or different works of the same class, are dangerous and may lead to serious trouble between all parties concerned.

To sum the matter up: If the specification drafter clearly understands what he is writing about, says exactly what he means, and not a word more, clearness, brevity and consistency will be attained.

The difficulty of obtaining fully detailed information of what is really wanted when bidding on work is one of the serious problems which often confront the contractor, for it is largely the details which determine what work is really worth.

The more doubtful, therefore, the bidder is as to what may be required of him, the greater sum will he add to his price for contingencies which may arise. This will be particularly so if the engineer bears a reputation for narrow-mindedness and arrogance.

The gist of the matter up to this point is to give all the necessary information in a specification, whether it be description of work and material, local conditions, quantities, matters of extra work, etc., and to have it properly expressed so that all bidders may precisely and explicitly know what is required of them.

It is well known that time penalty clauses are not often enforced in a contract, and the general opinion largely prevails among construction men that they are of little effect. One of the chief reasons for these conditions is that usually the owner, corporation or engineer is unable to keep their part of the contract exactly on time, and there is always an avenue of escape opened for the contractor.

It is conceivable that in some construction work there is an absolute need of it being finished by a certain time, and in such cases the penalty clause may have some legitimate use; but in the usual construction contract its principal effect would be to raise the amount bid by tenderers who have fears of its application

It can be laid down as a rule that the competent contractor is most anxious to finish the job as rapidly as is consistent with efficiency. Construction work, in common with many other operations, has an efficient and economical rate of progress. To exceed this means increased cost and therefore, if possible, specifications should state a reasonable time for

the completion of the contract, giving due consideration to unforeseen difficulties and contingencies which may be encountered in the work, and also in the customary local conditions appertaining to the work.

The time penalty clause should be used only in exceptional cases where it is an absolute necessity to complete within a certain time. The careful bidder will then make due provision for the same in his tender. It seems ridiculous to have, for example, a fifty-dollar-per-day time penalty clause placed indiscriminately in all contract specifications, when in nearly all cases the contract will be carried out along the usual lines of making speed as rapidly as circumstances permit.

Specifications are usually divided into two divisions, the first, the clauses relating to the description of the work whose accomplishment is the object of the contract, called "Specific Clauses."

The second division relates to the rights, duties and obligations of the contracting parties, and the engineer or owner. These might be called the business relations, or "General Clauses."

During the process of developing specifications it would appear that the general clauses have received more cultivation than the specific clauses.

Many of these latter clauses (sometimes known as "The Big Stick" clauses) are manifestly unfair, illegal and injurious to the profession.

The clauses governing the inspector's power are also usually contradictory, for example: An inspector shall be appointed by the corporation and the contractor obey without question his order and instructions, but no approval of the inspector shall be taken as an acceptance of improper work or material, which must in every case be removed and promptly replaced when discovered.

The inspector has power to order defective work or materials but has no power to accept same. Surely an unfair condition to impose

To the credit of most architects and engineers be it said that disputes are usually settled on a basis of justice and equity to all parties. Nevertheless, much injustice has been done by narrow-minded and arrogant individuals who have taken advantage of the literal reading of these clauses. Particularly where the amounts involved are not great. Business men well know that it does not pay to enter into litigation unless the issues at stake are important, because the large corporation or municipality has plenty of money and legal machinery to give battle to the contractor, without any individual suffering personal loss.

These things, however, do not reflect credit upon the ability or character of architects and engineers as a class. Hence we see many contractors voicing a profound contempt for the profession. This is of great disadvantage to the profession at large and also to the interests of the general public. Architects, as servants of the public in the highest sense of the term, should maintain a high standard of fairness and justice, as in so doing they best conserve the interests of their employers. Nothing is to be gained in the long run by endeavoring to get something for nothing from a contractor.

Contractors are as susceptible as a weather vane to the personality of an architect, and the unfair or unjust individual's reputation will follow him and will be sure to increase the cost of his work, or, in other words, the cost to the public.

Action of Alkali on Concrete

THE U. S. Reclamation Record presents a concise discussion of the action of alkali on concrete, based upon government investigation to date.

What do we know about the disintegrating effect of alkali waters and soils on concrete? This question can, perhaps, be answered best after breaking it up into several narrower questions as follows:

(a) Does alkali disintegrate concrete?

(b) What forms of alkali have the greatest disintegrating effect and therefore require the greatest precautions against such disintegration to be taken?

(c) What kind of concrete is most easily disintegrated by alkali action?

(d) Can concrete be made that will withstand the most destructive kind of alkali?

(a) It has been found that concrete is disintegrated through seepage action of alkaline waters under certain conditions.

(b) Investigation has shown that the principal salts acting to produce disintegration are the sulphates, and especially magnesium and sodium sulphates. It is thought that of these the former is the more active, but this has not been definitely established. Different localities have shown different results for the same materials. Two extreme cases may be cited in the Sunnyside and the Belle Fourche project. Of a number of test specimens exposed on the former no disintegration was observed at the end of about eleven months with the exception of a specimen containing a soap and alum solution in the mix; the specimens were all of a 1:3:5 gravel mixture. Furthermore, none of the concrete structures on this project has been affected. On the other hand, various mixtures exposed on the Belle Fourche project were all found to be disintegrated at the end of eight months, with the exception of a 1:2 mortar specimen, which was not affected. Concrete structures on this project have also been disintegrated by alkali. Other projects showed intermediate results. Analyses of samples from the Belle Fourche project show magnesium and sodium sulphates present in strong solution, with the former predominating, and from the Sunnyside project show sodium sulphate only, and in much lighter solution. As a general proposition, it must for the present be concluded that in locations where alkali is present containing these salts, special precautions must be taken to prevent its possible action, unless experience with structures previously built has shown no deleterious effect, as in the case of the Sunnyside project above cited.

(c) It has been quite clearly demonstrated that the leaner mixtures of concrete are more easily disintegrated than the richer; also that the more scientifically proportioned mixtures—that is, those having least voids for given proportions of cement and aggregate—give better results. This is a natural result, as the action results from seepage of water into or through the concrete, which is retarded by the richer and more scientifically proportioned concrete.

(d) A direct and definite answer cannot be made to this question. Experiments have, however, shown that the more nearly impervious the concrete the less it is disintegrated by alkali. It is a natural deduction, therefore, that waterproof concrete will resist alkali action. Such concrete under certain conditions may be difficult to produce. Laboratory experiments have shown that it is possible to produce concrete that is practically impervious to water up to 50 pounds to 75 pounds pressure, and satisfactory

results have been obtained in the production of an impervious concrete in the field on structures where special pains were taken toward that end.

There are numerous patented waterproofing compounds on the market; there are also being manufactured several so-called alkali-proof cements. A number of these have been tested, but the results have not been any better than those obtained with straight Portland cement. Sand cements also have so far shown no superior alkali-resisting qualities. J. Y. Jewett, cement expert, gives his tentative opinion "that with good cement, with care in the selection of suitable aggregates, with proportioning to produce a rich, dense mixture, and with proper methods of mixing and placing, it is possible to produce a dense impervious concrete that will withstand the alkali action under ordinary conditions without the use of any special materials for waterproofing purposes." With fairly rich concrete an impervious skin of neat cement or rich mortar, such as is produced by working a flat spade between the concrete and steel or surfaced wood forms, will no doubt also have much effect in resisting the action of alkali.

* * *

Well Water for Concrete Highway Construction

J. B. Woodson, Division Engineer, California Highway Commission, tells how the State has made use of well water for concrete mixture in building the new highways in San Joaquin valley. In a letter to Engineering-Contracting he says:

A continuous and ample supply of water is one of the absolute necessities in the construction and curing of a concrete pavement. The building of the California State Highway through the great floor of the San Joaquin valley presented the Highway Commission a problem as to how and where to obtain water for the construction of the concrete pavement. For a distance of more than two hundred miles there were but few surface sources of water, except during the winter and early spring. If water is piped over any very considerable distance the amount of money tied up in pipe alone is large, and a contractor handling a section of from five to twelve miles of highway does not care to make such an addition to his equipment.

In the San Joaquin valley the water level along the route of the highway is from 25 to 70 feet below the surface. Wells were sunk at convenient intervals along the right of way of the highway. These wells were usually cased with the ordinary black butt joint casing 6 inches in diameter. The cost of the wells averaged 87 cents per lineal foot. A majority of the wells had to be sunk from 15 to 25 feet below the water level in order to reach a satisfactory material upon which the casing could be landed. Wells of this diameter have always supplied ample water for construction and curing of the pavement on this route of the highway. In a few cases the contractor has pulled the casing upon the abandonment of a well, but this practice has not proved economical, and generally the casing has been left in place on the completion of the highway.

* * *

The Selection and Service of Architects

SCHOOL boards who are at present engaged in building operations will read with interest a statement recently issued by the Iowa State Chapter of the American Institute of Architects. This statement makes clear the relations of client, architect and contractor and contains much sensible advice. Much difficulty may be obviated by careful attention to the principles which are here enunciated:

Persons who have never employed an architect are apt to be at a loss as to the proper way to proceed, while many who have had some experience are not fully posted in the matter and are more or less unfamiliar with the intricacies of architectural practice.

They may not understand that it is a profession; calling for men of the highest integrity, business capacity and artistic ability; to command respect and confidence as advisers, and to sustain a grave responsibility to the public. No one may have given them any practical information as to the relations that should subsist between client and architect. This may seem a simple matter, but experience has shown that lack of information on this subject is one of the most fruitful causes of trouble in building. The following is part of the Iowa State Chapter's report:

1. The owner's interests are to secure the most available service, suitable design, best construction, most economical expenditure of funds. These can only be obtained by employing not as a luxury, but as a necessity, an expert, a competent and reliable architect. The owner will be most benefited by choosing an architect before deciding upon anything else connected with the building project (in many cases even before fixing the building site and limit of expenditure), thereby gaining from start to finish the services of the expert's technical experience and knowledge in every phase of the problem.

2. Architecture in its highest element is a fine art—it is never a trade. The architect's practice is upon the same basis as that of the physician and the attorney; each is a profession, and selection should be on exactly the same principle, upon record for character, integrity, ability and fitness for the service; a sensible, businesslike, time and trouble-saving method.

3. The planning of a building is a process of evolution. Nothing but the full working out of the problem can produce this. The architect is a sort of clearing-house, in adjusting a multiplicity of ideas, wishes, needs, financial and other details. It is practically impossible for an advance program to be an absolute guide to the best eventual scheme. The data compiled by an architect for such purpose may be quite different from that which at the start suggested itself to either owner or architect. The owner should get the benefit of his architect's best ideas and various solutions of the problem from which to select, not simply what is presented to strike the attention, and "get the job."

4. Architectural competition is usually a handicap to the end sought. The functions of an architect are many and varied; he can be judged better by his reputation and completed work than by a preliminary sketch which represents merely one of his minor duties.

Do not expect competitive designs any more than gratuitous diagnoses, prescriptions and briefs. Plans are not like merchandise, kept in stock, to fit all individual needs.

A dishonest man, by trickery and illicit commissions from material and construction contractors, can easily augment his receipts to a larger amount than the upright one's fair fee direct from the owner, thereby proving more costly in the end, for it all comes out of the owner just the same.

5. Different architects, like doctors and lawyers, place different values upon their services, and their services likewise vary in merit and results. This should not confuse the owner—the best is likely to be the higher priced. It is safe to rely upon the reasonableness of the rates for minimum fees and principles of practice as recognized by the leading representatives of the profession and the higher courts.

Good service can only be maintained by at least a charge that experience by the large majority of the reputable practitioners and clients testify to be fairly remunerative, and by methods that insure equitable relations between owner and architect.

* * *

Utah's New School Architecture Law

THE state of Utah has enjoyed for many years the advantages of a law providing a state school building commission. Through the activities of this commission every building which has been erected in the state during the past five years has been carefully examined in the office of the state superintendent and has been criticised for its usefulness as an educational building, for its helpfulness and for its general safety. A revision of the law, passed in March, increases very much the powers of the state schoolhouse commission and creates the office of state schoolhouse architect. The

latter official is to be a paid employee of the State Department of Public Instruction, and will have broad powers under the act. The following is the text of those sections of the act which relate to the commission and to the State Architect:

Be it enacted by the Legislature of the State of Utah:

That no schoolhouse shall hereafter be erected in any school district in this State, not included in cities of the first and second class, and no addition to a school building, the cost of which schoolhouse or addition thereto shall exceed $1,000, shall be contracted for or erected until the detailed plans and specifications for the same shall have been submitted to a commission hereinafter provided for, and the approval of said commission endorsed thereon. Such plans and specifications shall show in detail its construction, the heating and ventilating system and the window lighting of such building. There is hereby created a commission consisting of the State Superintendent of Public Instruction, the Secretary of the State Board of Health, and the State High School Inspector. It shall be the duty of said commission to carry out the provisions of this Act. The commission shall not approve any plan for the erection of any school building, or addition thereto, unless the same shall provide at least fifteen square feet of floor space and two hundred cubic feet of air space for each pupil to be accommodated in each study or recitation room therein, and the total area of glass space in windows of each class or recitation room shall not be less than one-fifth of the floor area of such room. And no such plans shall be approved by them unless provision is made therein for assuring at least thirty cubic feet of pure air every minute for each pupil and facilities for exhausting foul or vitiated air and auditoriums hereafter to be constructed shall be well lighted and ventilated, and all cloak rooms shall be well ventilated. Buildings of four or less classrooms may be heated and ventilated with approved schoolroom heaters. No tax voted by a district meeting or other competent authority in any school district shall be levied by the trustees or boards of education until the commission shall report within sixty days after the plans are submitted to it. All schoolhouse plans and detail statements shall be submitted in duplicate and be filed and approved as required by this Act. Buildings of two stories or more shall have the stairs, halls, heating apparatus and fuel room constructed of fireproof material and shall have sufficient hall space, and a sufficient number of outward opening doors, stairways, lighting and heating plants and apparatus arranged to facilitate egress in case of fire or accident and afford the requisite and proper accommodations for public protection in such case.

The commission hereby created shall serve without compensation, and shall have the authority to employ an architect, who shall receive a compensation not to exceed $8.00 per diem for actual services rendered, which compensation shall be audited and paid from the State school fund as other accounts are audited and paid, and in addition thereto he shall receive his actual and necessary traveling expenses incurred while in the discharge of his official duties. It shall be his duty to examine all school plans and inspect all school buildings or additions at least once during the erection of such building or additions, or when called upon by the commission, to ascertain if all the provisions of this Act have been complied with. It shall also be his duty to inspect the school buildings of the State, when called upon, and when he shall find any such buildings to be unsanitary or unsafe for occupancy, he shall report the same to the commission. The commission shall thereupon make such recommendations to the boards of education to comply with such recommendations, within a reasonable time thereafter. The said architect member shall also act as an advisory architect whenever called upon by school trustees and inspect and advise on the heating, or ventilating system, not operating efficiently in the school. Provided said architect shall not represent directly or indirectly, any building materials or construction firm, association, or corporation, nor shall recommend, prescribe, or advise the use of any particular brand, or brands, of building materials to be used for, and in the construction of buildings provided for.

* * *

Architects Urge License Law

FACTS are continually developing to prove that Minnesota needs a law requiring architects to have a state license, says the Improvement Bulletin of Minneapolis. The Bulletin has urged action in numerous instances, and presented conditions in the building field which, to a fair-minded person, seemed to make it imperative that a license law be written on the statute books at the earliest possible moment. We have called attention to the big and increasing percentage of buildings going up without the services of an architect. The number and the size and cost of structures whose

permits show the name of no architect seem to be growing more rapidly than ever this year. They include store and office buildings and many flats, none of the largest and finest type, it is true, but still of a valuation in each instance which makes these improvements important. This means that the inspection of the construction of these large buildings depends upon the city building inspection bureau. If an architect were engaged his inspection would be constant. The city, with its staff looking after all construction within its extended limits, does the best it can.

The situation has evoked an appeal from a Minneapolis architect, L. A. Lamoreaux. He goes so far as to say that it would be a safe assertion that not one tenement, apartment building or residence in twenty has the care of an experienced architect. They are constructed by men who have had no experience or training in planning of buildings, who have no idea of the proper light or the desirable amount of area of a lot to be covered by the building to get the best results, and who have given no attention to ventilation or heating problems. How could you expect other results?

Mr. Lamoreaux says further: "Why do people, when they are to spend thousands of dollars, not go to someone who has made a life study of planning problems? Their own comforts as well as incomes would be greatly increased. Their buildings would not depreciate as rapidly, and most of the evils complained of in the 'housing problem' book would be done away with. Many of our more progressive states now require that all practicing architects be licensed. It should be done for the good of the people, as the health of the whole community depends upon the dwellings we live in, depends on light and air and good sanitation. States having such laws require that all buildings erected have the approval of a licensed architect. It would probably not be too strong a statement to say that the health of the community depends as much on the designers of our homes as it does upon our doctors.

"With a general law applying to all cities, and a law requiring a licensing of all architects, the same as doctors are now licensed, and the stamp of approval of some one of those men on all new work undertaken, most of the difficulties in the housing question would be solved. Most of our architects, in addition to several years' training in school, get from six to seven years' experience as draftsmen in an architect's office before attempting to do designing on their own responsibility. These results can only be had by intelligent guidance."

* * *

"Knocking" The Architects

Strange as it may seem, the architect very often forgets that the working drawings are made for the contractors and material men, and are not simply a display of draughtsmanship. The limit was reached last week by a well-known architect sending out a set of plans with the explanatory lettering so small that it could not be read without the aid of a strong magnifying glass. It was a strange sight, indeed, to see the sub-contractors looking through magnifying glasses. It is indeed very fortunate for both the client and the contractor that such absurdities are practiced by only a few of the profession. In addition to a few guesses thrown in, it is reasonable to expect the top price plus from every "sub," and when added to the hazardous risk of the general contractor, a small house grows into the price of a mansion.

If the architects who continue to turn out working drawings that should be accompanied by an interpreter would only take a week off to visit contractors' offices, they would see, to their edification, that the plans which receive the most attention and consequently the best bids are those that are plain and easily understood by the "sub."—Public Ledger.

Fireproof Construction in Public Buildings*

By ALBERT C. MARTIN, Architect.

THE subject assigned to me is that of "Fireproof Construction in Our Public Buildings," and particularly in our public schools, and in treating this subject I speak of fireproof construction in a relative sense only. By that I mean fire-resisting construction. This subject is of very great importance, but is seldom considered because of the erroneous idea of most public officials that the cost is prohibitive. This idea has probably gained most headway because architects and owners usually combine the idea of fireproof construction with the idea of elaborate and expensive construction. In my experience I have found that it is possible to build two- or three-story brick school buildings or buildings for similar purposes practically as cheap as the ordinary building of Class C construction; in fact, the school board in Los Angeles figure that their buildings cost about 9½ cents per cubic foot and the cheapest building erected was at a cost of 8¾ cents per cubic foot, and I know of a school building recently constructed for the board, of fireproof construction, excepting that the roof was of wood with composition covering and metal lath and plaster ceiling in the top story, at a cost of 9 cents per cubic foot.

This low cost is made possible in these buildings by using brick walls of the same thickness as for Class C construction, but omitting interior brick division walls and substituting concrete frame construction with hollow tile partitions and by substituting concrete beams and concrete slabs with wood sleepers and wood floors in lieu of the heavy joist and double floors with metal lath and plaster ceilings below.

In suggesting the use of reinforced concrete and not steel frame construction, I do not wish to be understood as favoring reinforced concrete construction in preference to steel frame fireproof construction. I only suggest it as it is much the most economical method of construction and for two- or three-story buildings it answers all the requirements in just as satisfactory a manner, although the salvage to future generations will, of course, be very much less.

For large public buildings of an ornamental character, such as central public library or a city hall, I would, of course, recommend the fireproof steel frame construction, as this construction lends itself best to alterations and additions.

While it is probably true that some of my fellow architects will not agree entirely with my statements in this paper, still I feel confident that a careful study of the subject will assure most owners and public officials that it is, at least in the long run, much more economical to build our public buildings of substantial and fire-resisting construction, and it is certainly the class of construction that is the most satisfactory and the safest from the point of public safety.

*Paper read at a meeting of Southern California Chapter, A. I. A., June 13, 1916.

HOUSE OF MR. J. T. DONAHUE, CLAREMONT
Jas. W. Plachek, Architect

A Word About Frame Dwellings

The frame dwelling is our commonest type. It is cheap, beautiful if properly designed, permanent if built of well-selected timber, and fully meets all of the requirements of the home builder and real estate owner. Many of the possibilities and advantages of the moderate-priced frame home have been ignored or overlooked because no architectural skill or training was utilized in the design or construction. Model plans are available from many sources, and while they are of great assistance to the man who cannot afford to consult an architect, it would be economy in the long run if such buildings, especially of the more pretentious type, could be constructed under the supervision of competent architects.

A point frequently overlooked in considering other than frame construction for the dwelling is the relative heat radiation in walls of various kinds. In tests made by the German government of heat transmitted per square foot of wall surface per hour, it was found that the frame house, with 7/16-inch clapboards, building paper, sheathing, lath and plaster, had a heat loss factor of .23 of a B. T. U. per degree as against .37 for plain brick walls one brick thick, and .36 for brick walls one brick thick plastered inside. In stone walls a thickness of 20 inches is required with sandstone to reduce the heat factor even to .35, while with a 12-inch stone wall the loss was .45. Concrete blocks are in about the same class as limestone in coldness and will have a heat loss factor of about 35 to 50 per cent more than frame construction.

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THE MERCED SCHOOL COMPETITION

An architectural competition was recently conducted by the School Trustees, city of Merced. It proved extremely unsatisfactory. When the program was first proposed the San Francisco Chapter, A. I. A., declined to sanction it. Later on the Society approved it and then at the last moment again placed its ban of disapproval. Some of the Chapter members had already submitted their plans. Others were about to do so and were greatly exercised when the final notice came which barred them from competing under penalty of being accused of unprofessional conduct.

The following from the minutes of the April 27th Chapter meeting explains that body's position in the matter:

> Mr. Mooser, for the Committee on Competitions, reported concerning the Merced High School Competition that the first program as issued by the High school board had been disapproved and that after a visit of a committee from the Chapter to Merced the Trustees had agreed to make the program accord with the requirements of the Institute, and that in that form the program had been approved. This accounted for the fact that the members had received the three notices, the first notice of disapproval and the second one of approval. Then, after the form of the program had been accepted, the Trustees had seen fit to insert a clause guaranteeing the cost of the building, and as this was contrary to the understanding had with the board and also the requirements of the code, it was decided that the competition should be again disapproved and the membership of the Chapter were notified accordingly.

There were eighteen competitors. The building was to cost $130,000. The designs were judged by a jury of eight persons, namely: five members of the Board of Trustees, one certified architect chosen by the board, the Superintendent of Schools of Merced county and the principal of the Merced Union High school. The plans were numbered and the names of the architects were under seal in envelopes numbered correspondingly. None of the names of the competitors was known to the jury in selection until after the choice was made and announced. Willson J. Wythe of Oakland was called in by the board as architectural adviser. Mr. Wythe eliminated all but seven plans. The design which the jury considered best out

of the seven was then selected, the author proving to be Charles H. Biggers of Bakersfield. Second choice went to De Remer & Hewett of Los Angeles, third to William H. Weeks of San Francisco, and fourth to Stone & Wright of Stockton.

But it appears this judgment was not destined to be final. After the announcement had been made, some members of the jury seemed displeased, as it was claimed the selection was not made by a unanimous board. It was announced that nothing would be done till after the bond election, June 2. The election resulted in a two-thirds vote for the bonds. Since then and up to the time of going to press no confirmation of the award has been received, although the competitors have had their drawings returned to them. Rumor has it that the Trustees will proceed to appoint an architect regardless of the jury award. If this should be the case, the affair ought to serve as a warning to architects in good standing who may be tempted to participate in future competitions of like character.

SHOULD ENGINEERING SOCIETIES PASS ON PUBLIC QUESTIONS?

A short time ago a reinforced concrete structure was being built in a certain city under the supervision of that city's engineer. Rerolled steel, employed as the reinforcing material, was objected to by one of the city aldermen, who brought the matter to the notice of the council. The city engineer was asked to explain. The argument fast degenerated to the seesaw order, and a deadlock resulted. The papers then took a lively interest in the matter, and last of all that colossus of astute intelligence—the man in the street—began to furbish up some of the minor parts of his subconscious stratum.

When a deadlock is established in a controversy, one of the contending parties is very apt to undertake hasty action. Otherwise complete collapse results. In this particular case the council, instead of taking the matter in hand and obtaining a report on the dispute by some competent person, collapsed.

What next happened was well nigh incomprehensible. An engineering society, uninvited, informed the council that it would be pleased to go into the matter, its services to be given free. The old adage, "Beware of entering into a quarrel," etc., had no terrors for the society. It did not occur to the members that they were exposing themselves to a rebuff in case the council awakened to a sense of its responsibility and again took the matter into its own hands.

This incident brings up the question, Have our engineering societies the right to assume the role of adjudicator on all subjects of an engineering nature? The editor of the Contract-Record asks on what authority some individuals have assumed to pass upon engineering matters and then brand their findings with the name of an engineering society. In looking through the constitutions of engineering societies it is difficult to find any laws or rules that clothe the members with judicial authority. We have yet to hear of any unwritten law or custom bearing on the subject.

No matter how high sounding our societies' titles may be, we should never lose sight of the fact that these associations are composed of fallible men. Our societies generally recognize this fact, and for this reason they have not included in their plan of organization any provision for investigations of a public nature. As an illustration of the statement that engineering societies are composed of fallible men, the writer asked one of the executives of the society that proposed the investigation referred to what his views were on the subject. This gentleman said that he did not care two straws whether any reinforcing was used in the structure or not! This statement is analogous to that of a baker who informs you

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that he can make currant bread without currants.

When a society intrudes in such a manner, we naturally ask ourselves, What is this being done for? It is said that there is never a good action done but that there is a small grain of bad in it. The truth of this saying can be seen on a moment's reflection. Did the society offer its services with the intention of placing its decision in the category of "no higher appeal," or was there some extraneous consideration?

California State Building Competition

Editor The Architect and Engineer
of California:

This will acknowledge receipt of your letter of the 22d inst., asking for information regarding the competition for the selection of an architect for the San Francisco State Building.

As you state in your May number, I am now preparing the program. I expect that it will be ready for issuance within a month or six weeks. It will be premature at this time for me to give you details as to the nature of the program, since these details have not yet been finally determined and approved.

The statement in your May number is probably approximately correct with one important exception, namely, that the State Architect will be one of the members of the jury. The State Architect is acting as architectural adviser and will not be a member of the jury.

I will be glad to give you more complete information when the same is available. Yours very truly,

GEORGE B. McDOUGALL,
State Architect.

State Building Competition

Editor The Architect and Engineer
of California:

In connection with the proposed competition for an architect for the new million dollar State Building to be erected in the San Francisco Civic Center, it is reported that the architects of the entire country will be invited to compete. This is wrong. The taxpayers of California will pay for this building and the architects of California, who belong to this host of taxpayers, are entitled to some consideration. There would be considerable of a protest if the State authorities were to let the contract for erecting this building to an Eastern firm, likewise vigorous objection would be forthcoming if the materials used in its construction were all purchased outside the State. Make the competition open to architects in good standing in California exclusively.

Another point: It is rumored that one of the conditions of the competition will be that each applicant shall qualify by submitting examples of executed work. This will fall rather hard on some who lately have taken up the practice of architecture. It is not a fair requisite to my way of thinking.

ONE WHO HOPES TO QUALIFY.

San Francisco Society of Architects

The San Francisco Society of Architects has elected the following officers for the year 1916-17: President, Charles Peter Weeks; vice-president, George W Kelham; secretary and treasurer, Warren C. Perry; directors, Frederick H. Meyer and Ernest Coxhead.

One Architect's Work

An architect in the southern part of the Middle West has, during the present spring, waged a war on firetrap and health destroying school buildings. He writes very modestly of the results of his efforts:

"By a timely campaign this year, I have induced seven boards to raise the amounts of their bond issues so as to provide fireproof buildings, instead of the wooden interior schemes they had contemplated.

"I have also waged a campaign against dry closets, etc., in favor of the more modern plumbing equipment, and have met with much success."

An architect of this type is not only an honor to his profession but a genuine public and social benefactor. He deserves patronage because he gives service unselfishly and freely and has the future welfare of children, rather than his own pocket book, constantly in mind. —School Board Journal.

Architect of Oakland Auditorium

Editor The Architect and Engineer of California:

A very interesting article on Oakland Parks and Lake Merritt Improvement by L. S. Kerfoot, Superintendent of Parks in Oakland, appears in the May, 1916, issue, and I have just written Mr. Kerfoot regarding the authorship of the Municipal Auditorium.

On page 65, in the first paragraph, it states: "that the Municipal Auditorium is the work of Messrs. Palmer and Hornbostel of New York, with whom was associated John J. Donovan, former City Architect," and I have written to Mr. Kerfoot regarding that, and I beg to request that whenever the Oakland Auditorium is referred to, that the names of the architects connected with that building should read: John J. Donovan, architect, and Henry Hornbostel, consulting architect.

I believe the error is not due to any intention on Mr. Kerfoot's part to misname the architect on the building or to offend in any way.

JOHN J. DONOVAN.

Apartment Houses

Rousseau & Rousseau, 110 Sutter street, San Francisco, have completed plans for a three-story and basement frame apartment house for Laura M. Jordan, 1849 Larkin street, San Francisco.

The same firm has completed plans for William G. Gilmour for a three-story and basement Class "C" apartment house to be erected at a cost of $20,000 on the northeast corner of Howard and Seventh streets, San Francisco.

Parochial School for Vallejo

Smith O'Brien, the San Francisco architect, is preparing working drawings for a two-story and basement Class C parochial school to be erected at Vallejo for St. Vincent Ferrer parochial school. The building will cover a ground area 154x88 feet and will be of reinforced concrete and tile. There will be fifteen class rooms, fourteen music rooms, a large gymnasium, etc. The estimated cost is $60,000.

Big Store Building

Arthur Arlett, Architect Benjamin G. McDougall and Allen Moyer recently purchased, through the Kern-Neilan Co., the northwest corner of Eighth and Mission streets, San Francisco, for $175,000. This lot has a frontage of 275 feet on each of these streets. The new purchasers have already started the erection of a one-story brick building covering the entire lot, which will contain twenty-nine stores and eight units of industrial space. The plans show that the stores are to face on the two streets and have a depth of 50 feet. In the rear of this it is proposed to erect a warehouse and manufacturing site, divided into eight parcels, the entrance thereto being by use of a private way running from Eighth street. The total cost of the entire building will be about $76,000.

Architectural Exhibit for Oakland

The architects of Alameda county will hold an architectural exhibition in Oakland in August.

The exhibition will be given for the purpose of interesting the public in building activities. It will consist of drawings and models of proposed or executed work in structural, decorative and landscape architecture.

The Alameda county Society of Architects has arranged to secure exhibits from all of the principal cities of the Pacific Coast. The committee in charge is: C. W. Dickey (chairman), J. J. Donovan, Charles W. McCall, W. H. Ratcliff, Jr., J. H. Thomas, Walter Steilberg, Henry Gutterson and Harris Allen.

Architects for Visalia Schools

Swartz & Son of Fresno have been commissioned to prepare plans for the erection of new grade school buildings in Visalia for which bonds in the sum of $105,000 have been voted. The new schools include a two-story building to contain twelve class rooms and auditorium; a six-room and auditorium building, and an addition to one of the present grammar school buildings to contain eight class rooms and auditorium. The new buildings will be of either brick or hollow tile construction with stucco exterior.

Catalina Island Improvements

The Santa Catalina Island Company has been authorized to issue $1,000,000 bonds, of which $400,000 will be used for improvements and the remainder to refund outstanding bonds. Included in the proposed improvements is the new Hotel Metropole, which will probably be built at Avalon. The hotel will contain 150 rooms. Hunt & Burns, Laughlin building, Los Angeles, are the architects.

New Residences Planned

Peter B. Kyne, the well-known short story writer, who is at present living in Northbrae, Berkeley, has purchased a residence site in the Highland Court Tract, Oakland, and will erect a new home there. In the same tract H. L. Fletcher of the Standard Oil Company is planning to build a costly home. Frank H. Woodward of the Great Western Power Company will build a home on the corner lot of Clarendon and Crescent avenues, Oakland, at a cost of $12,000.

Elmer Grey Honored

Elmer Grey, architect of Los Angeles, is one of twelve prominent architects invited by the Pictorial Review of New York City to prepare designs for a residence to cost not more than $6,000 to be published in that journal. The object of the publications is to place before the public designs of the highest merit and thereby stimulate interest in good architecture. Mr. Grey's more recent work will be shown in a forthcoming number of The Architect and Engineer of California.

Santa Fe Leases Skyscraper

It is announced that the Santa Fe Railway Company, whose offices are situated in the Monadnock building, San Francisco, will lease the entire ground floor and three additional floors in the twelve-story office building to be erected at Second and Market streets for a client of John S. Drumm, and for which plans are now being completed by Messrs. Wood & Simpson.

George Wagner to Build Apartment House

George Wagner, Hearst building, has purchased two 50-vara lots at Pierce and Fell streets and Pierce and Hayes streets, San Francisco, from the Barron Estate and will immediately commence the improvement of the property. This will include a large apartment house and a number of private dwellings. About $80,000 will be expended on the improvements.

Architects for Martinez School

Messrs. Stone & Wright of Stockton have been selected as the architects for the new grammar school to be erected at Martinez. The building will be a two-story Class "C" structure, with an assembly hall and ten classrooms. It will cost $60,000. Five other architects submitted plans.

Bank Will Erect Branch Building

The Citizens Savings Bank of Alameda has just acquired the parcel of property at Haight and Webster streets, Alameda. Mr. J. V. Bordwell, cashier, states that a branch building will be erected costing about $10,000.

New Work at Stanford University

Messrs. Bakewell & Brown, 251 Kearny street, San Francisco, have completed plans for considerable work to be done at Stanford University, Palo Alto, during the summer vacation. A substantial addition is planned for Encina Hall, the largest dormitory on the campus. A new bandstand, to be used for concert purposes, has been authorized by the university trustees and a contract for this work will be let by Vandermar Stowe, business manager. It will cost $3,500. Bakewell & Brown have also completed plans and forwarded them to Stanford for a concrete swimming pool for the women students. The tank will cost approximately $33,000.

Sale of the "Tower of Jewels"

The "Tower of Jewels," which was one of the show pieces of architecture at the Panama-Pacific Exposition, has been purchased by a firm of pipe dealers, the members of which are considering the means of its disposal. The high prices of steel and lumber give big value to the materials that were used in the spire. It is said that in the tower are 2,000,000 feet of No. 1 pine lumber, which would be marketable at a good figure. In addition the tower contains 2,000 tons of structural steel.

$60,000 Apartment House

Messrs. Lapachet & Larsen, who recently formed a partnership for the practice of architecture, with offices in the French Bank building, San Francisco, have completed plans for a high-class apartment house to be erected on the northwest corner of Post and Leavenworth streets, San Francisco, for the Metropolis Investment Company. The building will have four stores and thirty apartments and will cost approximately $60,000.

Will Build Concrete Boat

Plans have been prepared by Pierre Zucco, C. E., Whittell building, San Francisco, for a concrete boat to be built on the Alameda estuary for Mr. R. J. Tyson, president of the Seaboard National Bank, San Francisco. The boat will be more or less in the nature of an experiment. Both sides will be of reinforced concrete, with a thickness of two inches. The concrete frame will extend six inches above the water line.

Theatre and Studio Building

J. J. Frauenfelder, 1116 Story building, Los Angeles, is preparing plans for a nine-story and basement Class "A" theatre and studio building, to be erected on the southwest corner of Broadway and Third street, for a syndicate of Los Angeles capitalists composing the company known as the Business Stability Association.

Alameda Beach Building

Benjamin G. McDougall, Sheldon building, San Francisco, is the architect of the beach improvements planned for the Alameda water front by Messrs. Boynton & Minor. A three-story building to cost $100,000 will be erected. It will be used for bathing purposes. The building will contain 1,200 dressing rooms, locker rooms, gymnasium, hot water heating plant, filtration plant, shower and tub baths, laundry and sterilization room, deposit vaults, three separate swimming pools, handball courts, electric and medicinal baths, running track and a gallery with seating capacity of 1,000.

Concrete Bank and Store Building

Harrison Albright, Laughlin building, Los Angeles, is preparing plans for a two-story reinforced concrete store and bank building, a one-story garage and a one-story moving picture theater to be erected at the corner of Orange and Loma avenues, Coronado Beach, for J. D. and A. B. Spreckels. The two-story building will contain fourteen stores and a banking room on the ground floor and offices and apartment suites on the second floor. Construction will be Class "A." Both will be of reinforced concrete construction.

Fabre & Bearwald Busy

Messrs. Fabre & Bearwald, architects, in the Merchants National Bank building, San Francisco, have over $100,000 worth of new work, including a four-story concrete hotel for Yvasse Bros., a building for the California Wine Association and a residence flat building for S. Alliguie, the latter to be erected on the south side of Pacific street, east of Mason, San Francisco.

Class "A" Hotel

Messrs. Morgan, Walls & Morgan, Van Nuys building, Los Angeles, have completed working drawings for an eleven-story Class "A" reinforced concrete hotel building to be erected on the northwest corner of Sixth street and Grand avenue for Frank Simpson. The building will be 60x80 feet and will contain 150 rooms, each provided with a private bath.

Stanford School

John J. Donovan, Dalziel building, Oakland, has plans completed for a new district school to be erected on the Stanford University campus, and bids will be called for as soon as the bonds have been sold. The building is to be one-story frame construction with plaster exterior and shingle roof. The estimated cost is $22,000.

Copyrighting of Architects' Plans

An architect's plans are the creation of his brains, evolved from study, experience, a love for the beautiful and knowledge of all that is practical in building. Such being the case, the architect is as much or more entitled to copyright protection than the author who flashes upon the public sensational trash under the name of novel, or the historian or scientist who has devoted his to the collection of the knowledge he thus gives to the public, hoping thereby to reap the just reward for his labors.

There has not been presented a just, valid or reasonable argument why plans and perspectives drawn by an architect should not be copyrighted. On the contrary, many sound arguments could be advanced why this should be done.

A man who, seeing a design that pleases him, copies and uses it, is taking the property of another, just as much as if he stepped over a garden fence and helped himself to a neighbor's choicest fruit or flowers. Unless the design is copyrighted there is no legal reason why he should not thus appropriate the work of another.

Copyright protection is something an architect is entitled to and should have, and there is no good reason, ethical or otherwise, why he should not avail himself of the opportunity for this protection.—Mid-West Construction News.

Hotel Additions

Architect Arthur B. Benton, 114 North Spring street, Los Angeles, has completed plans for additions and alterations to the Arlington Hotel at Santa Barbara. The present tea room will be remodeled into four guest rooms with private bath rooms. Seven frame and plaster sleeping porches will be erected and frame pergolas constructed.

Concrete Loft Building

Architects Mayberry & Parker, 472 Pacific Electric building, Los Angeles, have plans out for the construction of a five-story and basement reinforced concrete loft building on Los Angeles street, between Seventh and Eighth streets, for Valentine Kratz.

More School Buildings

William H. Weeks of San Francisco has been commissioned to prepare plans for a $60,000 high school building for the city of South San Francisco. Mr. Weeks is also preparing plans for a high school building at Tracy.

Personal

John C. Austin, architect, of Los Angeles has been elected president of the Jonathan Club. Mr. Austin has been serving the club as acting president during the past year, during the absence of the president, Henry E. Huntington.

New Building for Hollister

William Binder, Rea building, San Jose, will prepare plans for a concrete building for mercantile and warehouse purposes for the Grangers' Union at Hollister. The building will replace the one recently destroyed by fire. Mr. Binder has let a contract to William Radke of Gilroy for the construction of a one-story telephone building at Gilroy for $6,700.

Hollow Tile Residence

Messrs. Allison & Allison, 1406 Hibernian building, Los Angeles, have prepared plans for a large residence to be erected in the Arroyo Seco at Pasadena for Mrs. J. C. Daniels. The style of architecture is French. With garage and landscape work, the investment will run close to $50,000.

Contract for Store Building

Alice Arnstein, Oakland, has awarded a contract to P. A. Palmer, Monadnock building, San Francisco, for the erection of a one-story Class "C" store building at the northwest corner of Twenty-eighth and Broadway, Oakland, for $20,000. The plans for this building were prepared by W. D. Reed, Oakland.

Hollow Tile Residence

Messrs. Morgan, Walls & Morgan, Van Nuys building, Los Angeles, are completing plans for a two-story and basement hollow tile residence to be erected in the San Fernando valley for Merritt H. Adamson. It will be of Italian design and will contain about twenty rooms.

Colonial Residence

Messrs. Hunt & Burns, 701 Laughlin building, Los Angeles, are completing plans for a two-story and part basement frame Colonial residence to be erected at 2430 Gramercy Park, a subdivision adjoining Berkley Square, in Los Angeles, for Mrs. Jone Gilfillan Brown.

Palo Alto Store Building

Charles M. Moffett, 723 Story building, Los Angeles, has prepared plans for a one-story brick store building to be erected at Palo Alto for F. A. Taylor of Los Angeles. It will contain seven stores.

Concrete Bridges

Bids will be received by the California Highway Commission, 515 Forum building, Sacramento, up to 2 p. m., June 26th, for constructing two reinforced concrete bridges between Baird and Antler in Shasta county.

Addition to Normal School

According to President Allison Ware of the Chico State Normal School, an eight-room addition will be built to the Normal Training School to cost approximately $15,000. The plans have been prepared by the State Architect's office.

$150,000 Apartment House

Dr. Albert Abrams, Fairmont Hotel, San Francisco, has recently purchased the southwest corner of Sutter and Leavenworth streets, San Francisco, and will build an apartment house on the site costing approximately $150,000. It is the intention to combine physicians offices and dwelling apartments, the suites consisting of reception room, consultation room and laboratory, with connecting private hallway into a living apartment of five rooms. There will be two elevators, one for the living apartment and one for the professional offices. Construction will be steel frame and probably reinforced brick walls. Equipment will include vacuum cleaning, steam heat with oil burner, hot water service, etc.

San Diego Architects

The San Diego Architectural Association has elected the following officers for the ensuing year: President, Charles Cressey; vice-president, W. Templeton Johnson; secretary and treasurer, R. Halley, Jr.

J. B. Lyman is the retiring president, during whose term the association received official recognition by the San Diego City Council and Board of Library Trustees in architectural questions before those bodies. It was decided to resume the regular monthly meetings of the association and announcement was made of an interesting paper to be read at the next meeting on "Builders Quantities," followed by discussion of the system as the basis of building contracts.

Final Chapter Meeting

The Southern California Chapter of the American Institute of Architects held a very interesting dinner on the occasion of the last meeting before the summer vacation on Tuesday evening, June 13th. Architect Lyman Farwell was chairman of the entertainment committee. The Mayor and members of the Board of Education, City Council, Board of Public Works, Board of Supervisors and other public officials were guests, and some interesting addresses on school architecture, city planning, park improvements and other kindred subjects were made.

Oakland Textile Factory

Contracts will shortly be awarded for the construction of the big plant in Oakland of the Oakland Textile Manufacturing Company. The plant will be erected in the form of a quadrangle, the buildings consisting of a machinery hall 224x80 feet, weaving department 212x80 feet, finishing and dyeing department 150x50 feet, together with a power house. All the buildings will be one story in height and constructed of steel and brick with steel sash throughout.

The Atelier Allison

The Atelier Allison recently closed a successful season and in celebration of the event a banquet was held at the Bristol Cafe, Los Angeles. There were present about twenty members of the Atelier, and Messrs. J. E. Allison, D. C. Allison and John T. Vawter and John Curtis. The society decided to continue its work during the summer with classes in engineering and freehand drawing. Next season when the Beaux Arts problems are taken up again the society will be divided into three groups, one under the direction of J. E. Allison, another under J. T. Vawter and the third under John Curtis. Donald R. Wilkinson has been elected massier to succeed Joseph Weston, who has served efficiently during the last year.

The Atelier has obtained more mentions in a single season than in the four or five years previous. The drawings of the society have been passed upon during the last year by the Society of Beaux Arts Architects of New York. Recently Gene Verge received a mention and publication on a sketch problem and Donald Wilkinson received a mention on the same problem. On a clubhouse problem recently studied Leslie Mahoney secured a first mention placed and publication, Archie Zimmerman a first mention, and Saul Brown and R. B. Parks received mentions.

Masonic Temple for Vallejo

Competitive plans have been submitted by several San Francisco architects, among them John Davis Hatch and O. R. Thayer, for a $65,000 Masonic Temple to be erected at Virginia and Marin streets, Vallejo, for the Masons of that city. The building will be of reinforced concrete, three stories and basement, with the third floor built on the mezzanine plan, so that the main hall can extend to the full height of the building.

Contains Much of Vital Interest

Editor The Architect and Engineer:

There is no architectural magazine that I have ever read that contains so much of vital interest to the architect as your publication. You and your associates deserve the highest commendation, and I am sure that nothing but success will crown your efforts.

Yours very truly,
CHAS. S. HOLLOWAY, Architect,
916 Lakeside Place, Chicago, Ill.

More University Buildings

John Galen Howard has completed plans for an agricultural building to cost $350,000 and a chemistry building to cost $250,000 for the University of California. Both buildings will be of the Class A type in harmony with the other structures on the campus.

Electrical Department

Indirect Lighting

By OTTO H. MOHR.

DAYLIGHT is a mixture of two kinds of light, and its quality changes continually as the day progresses. It is most satisfactory and pleasing from sunrise until 10 a. m. and from 3 p. m. until sunset, for between these hours the eyes are exposed to the lower intensities and the light is then very diffuse.

At noon, on an unclouded day, daylight is almost entirely sunlight, and at this time an unobstructed surface receives directly from the sun 85 per cent of its incident light, and but 15 per cent from the sky dome. On such occasions the intensity is from eight thousand to nine thousand times greater than the eye needs to read ordinary print, and to use the eyes to any extent under this light is inadvisable, especially for close work.

Too strong a glare does not increase lighting effectiveness, but lessens it if too great, for objects cannot then be seen plainly. There is a certain intensity beyond which light not only ceases to be real illumination, but in which it defeats its own purpose by unduly fatiguing the eye. The best lighting is that which produces the utmost clearness without straining the sight, which enables that to be most easily seen for which the system has been planned.

A very large proportion of the "tired feeling" so pronounced in city life, and which differs widely from the weariness resulting from a day in the country, is due to eyestrain. It is a great mistake to suppose that the steady use of the eyes under proper lighting is harmful.

Artificial light requires a much more careful use than sunlight, the latter having been filtered through many miles of air before finding its way to the earth's surface. In this filtering process many of the more harmful rays of light are removed. The extreme rays which lie at either end of the spectrum—the rays outside the red of the rainbow and the rays beyond the "blue" (known as the infra-red and the ultra-violet)—are very injurious and it is these which hurt our eyes in some systems of artificial lighting.

The problem is how best to apply the essential natural characteristics and requirements to artificial systems.

The terms direct, indirect or semi-indirect are merely descriptive in a general way, and really do not give the essential differences in these methods of lighting. The real division is on the basis of the size of the source. The tendency is toward larger sources, whether we obtain them by means of large diffusing and transmitting mediums or by reflection from a secondary light-giving area or diffusely reflecting surface. The important points to consider are the intrinsic brilliancy or surface brightness exposed to the eyes, and the direction of light.

Oculists, engineers and architects have long recognized the advantages of indirect lighting, and even to the average layman its merits have been apparent, but its progress as a universal lighting system has been greatly retarded, due to the fact that in the past it has been wholly dependent upon the walls and ceiling for its reflecting and diffusing qualities.

The walls and ceiling of any interior require a certain amount of light to show off to the best advantage any architectural or structural design, and where ornamentation occurs a definite amount and direction is required, but to flood these surfaces with light often results in a very unnatural appearance and also proves to be expensive, due to the high absorption of light from such surfaces. There may also be specular reflection due to the directing of light of high intrinsic brilliancy upon smooth surfaces.

That "decoration is limited to light tints" also constituted one of the strong arguments advanced by the proponents of direct lighting in endeavoring to combat the advance of the new indirect method, while the fear of added decoration costs and the nuisance of constant redecorating also acted as a deterrent to its general adoption.

To overcome these objections and to duplicate desirable daylight conditions as nearly as possible, self-contained indirect lighting fixtures have been designed, wherein the light flux is projected by a diffuse reflector upon a cone-shaped diffusing surface, which forms the upper part of the fixture placed on the ceiling. By properly proportioning the reflector and diffusing surface the light is reflected at the proper angle to the working plane, sufficient light being di-

rected to the ceiling and the side walls without having any visible surface illuminated beyond the allowable range for surface brightness. A wide range of distribution is possible.

The reflecting surface is made of bone and wood ash, and is permanent, easily cleaned, efficient, and above all, gives excellent diffusion.

The diffusion of the light flux by this unit is so good that a less intensity of illumination than usual is required on the working plane. A good diffuse lighting system increases the visual acuity or seeing efficiency, and when this is accomplished a lighting unit is efficient because effective.

There is no limit to the size of the units. For example, in the counsel chambers of the Oakland City Hall six small domes of 32 square feet each, six rectangular domes of 144 square feet each and three large center domes of 160 square feet each have been satisfactorily installed.

The typical photometric curve shows that the "slip light" has received proper attention. Architectural designs, ornamentations or wall hangings, etc., may receive the amount of light required to bring out the true color and design intended.—Journal of Electricity, Power and Gas.

Be an Electrical Contractor for $10

Our attention has been drawn to the following hand-bill recently circulated all too freely in the residence section of San Francisco:

TAXPAYERS ATTENTION!

Wire Your Own House on Your Spare Time
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We will sell you the material and have the job inspected.

If you like the business, become an electrical contractor for $10.

Call or phone for prices on fixtures or
Anything Electrical.

This is the sort of thing that hurts legitimate business. Can you imagine one becoming a competent electrical contractor with a $10 technical training?

This hand-bill and its alluring paragraphs should prove a good lead for an interesting investigation by the municipal authorities and State Board of Fire Underwriters.

Packing of Nails by Electricity

When next you go to the hardware store to buy some nails, you may notice a rather startling innovation which has been made in the packing and handling of nails in bulk. Heretofore they have been dropped loosely into a keg, and the pieces locking and interlocking as they do form a mass which is almost impenetrable to the scoop generally provided in the hardware store for the purpose of removing them from the keg. The scoop is almost superfluous, for the clerk is invariably compelled to remove the nails by hand and place them in the scoop in which they are conveyed to the scales. But now things are different. You will find the nails nicely and accurately arranged in a box, parallel to one another so that their removal by hand is a simple matter.

The greatest advantage of the new method, however, is that the nails systematically laid in a box will occupy a little more than half the space required when they are dropped in the keg. Boxes filled by machine have a capacity of fifty pounds each, although no larger than a five-pound confectionery box.

The machine for packing nails in the manner described is of German origin and just being introduced into this country. Its operation is based upon the principle that linear iron articles when brought into a magnetic field will automatically take a position parallel to the lines of force. The machine consists essentially of the electric paralleling mechanism, a feeding trough and a shaking device. By means of the latter, the nails glide gradually into the paralleling mechanism and while still falling are drawn in the direction of the lines of

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force. The nails are passed into a tray fixed between the two magnetic poles and at intervals the tray is pressed downward and the contents emptied into boxes. With but little adjustment the machine may be made to handle any size of nail. The paralleling mechanism uses direct current at 110 or 220 volts pressure.—Scientific American.

Water Power of the United States

ACCORDING to the Electrical World, the available water power of the United States, excluding Alaska, amounts to more than 28,000,000 horsepower, of which approximately 7,000,000, or 25 per cent has been developed. It is within reason to venture that the development of the remaining 21,000,000 horsepower will come within a time not greater than it has taken for the development of the first 25 per cent, for in the first period was included practically all of the experimental work connected with the harnessing of water power to the requirements of man and, latterly, with the application of this power to the generation of electricity. We may confidently expect, therefore, that the next ten years or so will see the greatest advance in hydro-electric development and particularly in the transmission of power from central points and for increasingly great distances. A noteworthy phase of this development of water power has been the increased development and efficiency of steam power. Increased water horsepower instead of lessening the demand for steam horsepower has steadily increased it. Unquestionably this will be continued, and the development of water power will be marked at every point by an equally notable development of steam power. As the trend of the hydro-electric plant is to get close to the prime power source and distribute that power to the points where men wish to use it, so the trend of steam power is, and will continue to be increasingly so, toward the development of that power close to the centers of fuel supply and convert it into readily transmissible power—and this includes not only power as directly applied to motion, but as applied to heating, lighting etc. Already there is a suburb of Glasgow, Scotland, in which every house is equipped entirely with electricity. Lighting, heating, cooking, everything ordinarily done with coal or wood or gas, etc., is done with electricity. Such towns, within a comparatively short time, will not be rare. We shall have them in our own land. And they will not mean the burning of less coal or wood or gas, but merely the shifting of the points of combustion, their concentration under improved conditions, and the transmission of their product mainly as electricity. Perhaps there never was a time in the history of the world so rich in promise of big things for the young man who just now is setting out to follow engineering lines in steam or electricity, as well as in heating, lighting, sanitation, and so on. The great things that are to be done, that even now are beckoning to the best we have to give in inventiveness, effectiveness, and enterprise, will become more insistent as they are pushed forward by the advance of steam, water and hydro-electric development.

New Cause for Short Circuits

A discovery "of much importance to telephone and electrical engineers in the United States," according to the Scientific American, has been made recently in California. A beetle with powerful mandibles has been found boring minute holes in the lead covering of telephone cables. The entomologist of the University of California calls this aerial beetle Sinoxylon declive, also a kind of beetle with a fondness for live hardwood. But what is the electrician or the plumber to do in combating the sinoxylon beetle that appears to climb poles and hunt its leaden fodder or egg laying place 'way up in the clear air? Short circuiting has been caused by both of these beetles when they have bored into telephone cables, and heretofore, so says the Scientific American, the trouble has been laid to electrolysis. Really there is nothing surprising in a bug that can bore deep into live oak making a hole in lead, for if anything the oak is the harder to cut. If the bug should show an increasing fondness for lead, however, a problem would be presented to find a metal pliant and plastic enough for cable covering yet hard enough to resist the mandibles of the beetles.

Municipal Ownership in California

According to the report of John S. Chambers, State Controller, one hundred and four cities and towns in the State own municipal water works, with receipts amounting to $4,312,619.34, not including bond sales or service deposits. The disbursements for operation, maintenance, water purchased, etc., amounted to $1,871,491.23, and bond interest and redemption to $1,570,430.16.

Ninety-six plants furnish 198,662 consumers; 48 plants used 16,182,500,973 gallons of water during the year; 90 plants have 3,224 miles of mains; 97 cities have 14,917 fire hydrants; 13 plants have gravity systems, 66 are operated by pumps and 19 are operated by both; 22 plants were acquired in 1900 or previous; 35 plants were acquired between 1901 and

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1910; 29 were acquired between 1911 and 1914, and 6 plants were acquired between 1914 and 1915. This indicates that municipal ownership of water works is progressing in an increased ratio.

Seventeen municipal lighting plants are reported and show total ordinary receipts of $782,818; disbursements for ordinary expenses were $466,982; interest and redemption of bonds, $44,963. Twelve plants buy their electricity and five generate it; kilowatts purchased and generated, 24,133,282; 546 miles of pole line and conduit; 13 plants cost $2,344,261.

Thirteen cities operate municipal wharves and piers with receipts of $147,816; cost of operation, $111,145. Outlays for new structures were $847,698.

One city operated a gas plant with receipts of $14,427 and operating expenses $11,188.

One city (San Francisco) operated a municipal street railway.

California Lumber

California lumber mills sawed 1,119,628,000 board feet of lumber in 1915, according to figures compiled by the United States Forest Service from reports of 136 mills, and announced recently. Thirty-five mills cut 1,005,665,000 of the total.

Of the thirteen woods sawed, redwood led with a total of board feet sawed of 418,824,000.

With the exception of about a million board feet, it was all California timber. The cut this year fell short of the estimated cut of 1913 by 63,672,000.

Make Haste Slowly.

The folly of undue haste in designing and construction is set forth in the following article in a late issue of Engineering and Contracting:

"One marked tendency of the average prospective building owner is to start an insistent demand for excessive speed in design and construction as soon as the designer is engaged. The result is that there is unwarranted haste in every subsequent step incident to the turning over of the completed structure. Present methods are largely wasteful of time and money, and in many cases great haste is unnecessary. We believe architects and engineers have it within their power to correct many of the evils incident to undue haste in design and construction by carrying through a systematic campaign designed to educate prospective building owners to the absolute need for more time in design and construction. No intelligent designer is anxious to rush a job on which he is engaged, nor is any one designer able to bring about a change in existing conditions—by concerted action, however, we believe much good can be accomplished.

"The ordinary procedure is about as follows: First, the designer is asked to get out preliminary plans and an estimate of cost, or several plans and estimates of cost, within a few days. The result is that, if the job is a big one, the whole office force immediately begins to work overtime, and, in addition, new men—not accustomed to the methods used in that particular office—are engaged temporarily, and later dismissed summarily. In the meantime the architect's engineer, or some consulting engineer engaged for this job, is set to work to design a framework for a building which exists only in the architect's imagination, although at this stage there are available a few sketches, which the architect is certain to change before he finally creates something which apparently satisfies him. It may be pertinent to add that the engineer tries conscientiously to produce a skeleton which will hold up the useful and necessary parts of the building, together with its embellishments and superficial features, for each new conception of the architect. His success in doing this depends largely upon his luck at guessing. In the meantime the architect is kept busy dodging contractors and material men who have heard of the contemplated work and desire advance information. After the plans and specifications are completed, each bidder is given about ten days to make an estimate (?) of quantities and of what the work is worth to him, taking into account the existing condition of his affairs. The same rush and confusion exists after construction is started, and there is certain to be numerous occasions for conflict between the various sub-contractors.

"Enough has been said—lightly, yet seriously—to indicate to those not entirely familiar with building construction work some objections to the present hasty methods in design and construction. The wonder of it all is that the owner gets as good a building as he generally does. If he obtains an entirely satisfactory job it is reasonably certain that he has done so at the expense of those who have had charge of its design and construction, which, of course, is unfair. If the owner gets a poor job, it is partly his own fault, but only partly so, as he generally does not appreciate the difficulties which must be overcome before the completed building is turned over to him. The solution, we assert, is an education campaign conducted with the co-operation of all architects and engineers engaged in this kind of work. And such a campaign is well worth while."

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Architects' License Valid

According to a recent decision of the Supreme Court, the ordinance of the city of Grand Rapids covering the licensing of all architects in the city must be enforced, if the architects of that city want to be assured of receiving pay for their work.

The case in question was that of Randall W. Wedgewood of Grand Rapids, who brought suit in justice court about a year ago against Robert A. Jorgen to recover for services in drawing plans and specifications for a building he proposed to erect. A judgment of $400 was given Wedgewood, and the case was appealed to the Circuit Court and tried before Judge Perkins, who refused to dismiss the case on the ground that Wedgewood had not complied with the city ordinance making it obligatory upon all architects to take out a city license, making as a penalty the forfeiture of their fees to the person employing them. The case went to a jury and the decision of the justice court was affirmed.

An appeal was then taken to the Supreme Court. The Supreme Court held that Judge Perkins erred in refusing to direct a verdict, reversing the finding, and dismissed the suit without a retrial. The court held that the failure of the city to enforce the ordinance did not invalidate the law, and that by failure to take out a license as required Wedgewood forfeited his right to fees for the labor he did.

This decision is of far-reaching importance, as the licensing of architects in Grand Rapids has never been enforced, and owners of many of the largest business blocks in the city can now bring suit if they so desire, and under the law recover the money they paid the architects for services, on the grounds that they had failed to take out city licenses. —Michigan Contractor.

Will Start Work on Seven Residences

C. H. Miller, First Savings Bank building, Oakland, has drawn plans for seven frame and plaster residences to be erected in Stockton at a cost ranging from $3,000 to $5,000 each.

THE SPENCER TURBINE VACUUM CLEANER
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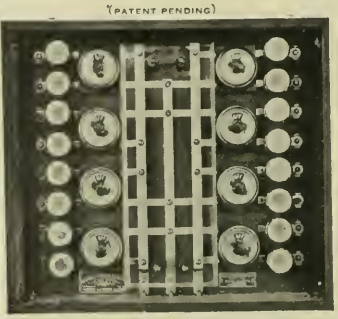

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M. E. HAMMOND, Pacific Coast Representative
217 Humboldt Bank Building, San Francisco.

The Prometheus Electric Company

The Contractor

HIS TROUBLES AND SOME OTHER THINGS

Collecting from Contractors*

By HOMER CLAY SMITH.

THE task of collecting from contractors presents some problems a little different from ordinary commercial lines.

The contracting business as a rule is recruited from the ranks of engineers, carpenters, plasterers, masons, ditch diggers and laborers. These men seldom have any preliminary training in business methods or principles. If they make money in their business they are apt to direct it into other channels. They are sensitive and must be handled with gloves. Upon the supply man devolves the necessity of teaching them proper methods, and to a considerable extent financing their business. If your bad debt loss for a period of years should amount to as much as three-fifths of 1 per cent, you should be interested in knowing how to reduce this to one-fifth of 1 per cent, which is fair enough, considering the hazards of contracting.

The contractor should be impressed first of all to consider his obligations secured. If your terms are thirty days he should learn to pay in thirty days. He should be taught to use the banks. If he cannot secure banking accommodations, he should be made to see the justice of giving security and paying interest on past due accounts.

As an illustration, to show him the necessity of your making prompt collections, say to him:

"Mr. Contractor, I have $50,000 in my business over my stock.

"I am selling on thirty days' time.

"In one month I sell $50,000 worth of goods.

"My cash has been turned into accounts receivable.

"If you take longer time I must go to the bank and borrow.

"Also I must put up security and pay interest.

"If your account must run for a longer time than thirty days, you should pay this interest, and you should give me security just as the bank requires me to do.

"My capital is not sufficient and the profit does not justify my carrying an account on any other terms."

Sometimes you will give credit to a contractor who has neither good morals nor property, taking the chance of collecting from the owner of the improvement if other means fail. This is dangerous business and such trade should not be cultivated. Competent men of good character you should encourage whether they have capital or not. The little contractor today may be the big one tomorrow. Establish strong connections. Deny credit to the proven crook. He will get the best of you in the end, and it is an injustice to the upright customer. In the words of Polonius:

"The friends thou hast, and their adoption tried,
Grapple them to thy soul with hoops of steel."

Here is given a set of collection letters, the persistent use of which will keep down the accounts outstanding and the bad debt loss:

1A.	Jan.	Dear Sir:—
	April	Referring to the enclosed statement showing invoice (invoices) dated (dating) .....amount.....
	July	You will notice that the account is now.....days past due.
	Oct.	Your check in payment to reach us by the 10th instant would be greatly appreciated.
		Thanking you for your patronage, we remain,
1B.	Feb.	Dear Sir:—
	May	You will notice the enclosed statement shows invoice (invoices) dated (dating)..... amount .....
	Aug.	The account is now.....days past due.
	Nov.	Would it be possible to let us have payment by the 10th?
		We thank you in advance for your kind attention.

*Atlas Almanac for March.

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ROOFING CONTRACTORS

682 Monadnock Building, San Francisco **Phone Sutter 3161**

Dear Sir:—

1C. Mar. / June / Sept. / Dec. — The enclosed statement is referred for your kind attention. You will notice the account covers purchase (purchases) (date) ($) and (part) is now past due. Remittance to reach us by the 10th instant will be highly appreciated.

Dear Sir:—

2A. Referring to our letter to you dated..... concerning past due account, we regret that you have not found it convenient to respond. Would it be possible to let us have check, please, within the next day or so?

With best wishes, we remain,

Dear Sir:—

2B. In order to meet our obligations maturing this week it will be necessary that we collect every account possible whether large or small, and this is our reason for asking that you be good enough to let us have check at once for ($) covering (date) invoice (invoices).

Trusting that you will favor us, and assuring you of our appreciation, we remain.

Dear Sir:—

3. On .....and again.....we wrote you requesting payment of past due account amounting to .....

If, for any reason, you are not ready to make payment at the present time, kindly explain the circumstances and you will find us reasonable.

Let us hear from you, please, within the next day or so.

Dear Sir:—

4. As we have received no reply to our letters to you of ..... asking for payment of account, we are at a loss to understand your attitude in this matter.

Our terms are thirty days and you have taken .....

We must now insist on prompt action. Unless check is received by.....we shall feel obliged to take such proceedings as appear necessary to enforce the collection of our account.

It will be noticed that letters Nos. 1 and 2 are varied so that if you have to begin a second series in a different month you will not repeat yourself. Have a set of these letters mounted on a card and it will not be necessary to do anything more than mark "1A" on statement of delinquent and pass over to your stenographer. Arrange for follow up in one week, or at most ten days. This saves dictating. The plan is elastic. You can omit letter No. 1 and start with 2B if the case is urgent, or you can combine any original or new matter with the form letter, at your own pleasure; but I consider it inadvisable to incorporate any selling arguments in a collection letter.

Try this and see if it doesn't bring results, and without losing any business or friends. If you can improve on the form letters submitted, do so, but always remember "molasses catches more flies than vinegar."

Getting Contractor and Architect Together

One of the chief lines of work which the General Building Contractors' Association of the Builders' Exchange has been following is the effort to bring the general contractor and the architect into greater working harmony. At a recent meeting the contractors adopted a bill of ten proposals which they hope to have endorsed by the architects. Among these ten proposals are the adoption of the uniform contract recommended by the American Institute of Architects, which provides for classification of subjects in the specifications, a board of arbitration and a number of other features making the contract, plans and specifications more definite and readily understandable. Another proposal is one which has been discussed between the contractors and architects for two or three years; this is the policy of opening bids in the presence of the bidders. Still another protests against taking alternate proposals or sub-bids. Other corrective measures are incorporated in the bill, which is broad in scope and covers the vital features of relationship between architect and general contractor.—Southwest Contractor, Los Angeles.

San Francisco Should Have a Building Material Dealers' Association.

At a recent meeting of the Building Material Dealers' Association of Los Angeles Mr. F. C. Price, formerly of Waterhouse & Price, but now coast representative of the General Fireproofing Company of Ohio, made a short talk on building material credit conditions in San Francisco, where he makes his headquarters. His hearers were astonished to learn that San Francisco has no building material dealers' association for the protection of credits.

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Building and Industrial Notes

New Catalogue of Austin Mixers

The Municipal Engineering and Contracting Company of Chicago has recently published an attractive catalogue of Austin Cube Concrete Mixers, showing full page halftone plates of the various models manufactured, with description of each, details as to capacity and cost of operation, method of operation, etc. Among the notable jobs performed with the aid of Austin Cube Mixers was the Detroit river tunnel, upon which fourteen Austin mixers were substituted for various other types that failed to give satisfaction. In constructing the Panama Canal over 100 mixers of the Austin type were used, ranging in size from two cubic yards to one-third cubic yard. During the year ending June 30, 1912, these machines mixed a total of 1,209,506 cubic yards of concrete. The actual working time of these mixers was 24,946 hours or 3,118 eight-hour shifts. Therefore, each mixer mixed per hour worked, an average for all sizes, of 48½ cubic yards, or one cubic yard every 75 seconds.

Austin mixers are handled in San Francisco by J. H. Hansen & Co., Balboa building.

War Prices of Building Materials

Some idea of how the European war has caused prices to jump in various products having more or less to do with building construction may be gained from a few examples: Graphite, 133 per cent; sheet iron, 69 per cent; pig lead, 42 per cent; sheet lead, 61 per cent; bridge and building lumber, 30 per cent; lumber stringers, 50 per cent; ferro manganese, 488 per cent; nails, 50 per cent; lead pipe, 65 per cent; soil pipe, 112 per cent; pipe covering, 27 per cent; rivets, 67 per cent; cold drawn steel, 92 per cent; soft steel, 97 per cent; tank steel, 94 per cent, and high-speed tool steel, 420 per cent. Turpentine has jumped 23 per cent; tin, 19 per cent; ties (f. o. b. Oregon), 15 per cent; brass tubing, 100 per cent; copper tubing, 69 per cent; valve brass, 59 per cent; brass wire, 175 per cent; copper wire, 69 per cent.

To Build Big Paper Mill

The Van Sant-Houghton Company, Hooker & Lent building, San Francisco, have the contract to erect a big paper mill at Ocean Falls, Canada, for the Pacific Paper Mills, a branch of the Crown Willamette Paper Company of Portland, Ore. Construction will be of reinforced concrete.

THE BIG-AN-LITTLE CONCRETE and MORTAR MIXER

Big Output—Little Weight
Big Profits—Little Cost
Capacity 35 Cu. Yds. a Day

All rounded surfaces—no corners for concrete to lodge in.
Revolves on ball thrust bearing, hermetically sealed to prevent grit from working in.
Equipped with levers for turning over and locking device to hold drum in place while mixing.

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Buttonlath in San Francisco

Mr. F. L. Riordan is now in charge of the San Francisco sales end of Buttonlath, manufactured by the Pioneer Paper Company of Los Angeles.

Mr. Riordan comes from the Southern California city, where he held a similar position for more than a year and succeeded in selling Buttonlath on buildings whose total cost ran into the millions. The material has proven its worth in Southern California without a doubt. In San Francisco the architects are beginning to appreciate its fire resistant qualities and its tendency to strengthen and improve all types of building construction.

In the recent campaign waged by the metal lath interests against Buttonlath, it is a significant fact that in searching for damaging evidence the opposition was unable to secure a single letter or statement from an architect or builder who had any fault to find with their experience with Buttonlath. That fact alone, it is said, should be sufficient argument to instill every confidence in the material.

Mr. Riordan has his offices in the Hearst building and will be glad to give architects and others interested the benefit of his long experience and thorough knowledge of the material.

New Steel and Iron Works

A new company whose officers are well known in San Francisco building circles has recently been incorporated as the Sims, Gray and Sauter Iron Works, 156 Main street, San Francisco. Mr. Sims, senior member of the firm, was connected with the Western Iron Works for nearly a quarter century. Mr. Gray is an experienced steel man, well known in San Francisco and the bay cities, while Mr. Sauter was for years estimator and engineer for the Judson Manufacturing Company. If thorough knowledge of the steel and iron game counts for anything, this new firm should have no difficulty in getting its share of the business. In addition to taking contracts on structural work, the company will make iron stairs and window guards, post caps and bases, auto truck frames, fire escapes, etc. The shop is now running on full capacity filling a number of splendid orders.

Granite Company Expands

The McGilvray Raymond Granite Company has established an office and yard in Los Angeles, and will handle granite from their Raymond quarry and cutting yard, and sandstone from their quarry and yard at Colusa.

This company furnished the sandstone for the Wilcox building, Second and Spring streets, Los Angeles. The work of this firm has largely been in the vicinity of San Francisco, their latest job being the new granite city hall, costing for the stone alone over $1,500,000, the largest granite contract ever let in this State. They are now furnishing the granite for the new public library, San Francisco. They also did the granite work of the Custom House, Union Trust building, the Colusa stone work of the Flood building, and many other buildings in San Francisco.

The McGilvray Company's new Los Angeles yard is located at Santa Fe avenue and Seventh street and is in charge of Walter C. McGilvray.

Announcement

The Kohler Co., Kohler, Wis., manufacturers of enameled plumbing ware, has opened new sales offices in the following cities: St. Paul, 725-726 Merchants National Bank building, Chas. A. McKenzie, manager; Detroit, 1148-1152 David Whitney building, Bart Downey, manager; Seattle, 308-309 Pantages building, W. B. Lambert, manager.

In addition to these, the company now has offices in Boston, New York, Philadelphia, Pittsburgh, Atlanta, San Francisco, Chicago and London.

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The Johnson System of Temperature Regulation
"SERVICE — Is Our Middle Name"
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600 CITIZENS BANK BLDG., LOS ANGELES, CAL.
149 FIFTH ST., SAN FRANCISCO, CAL.

Sloan Valves on Pacific Coast

In recognition of the increasing demand for high-grade equipment among Pacific Coast architects and engineers, the Sloan Valve Company of Chicago, manufacturers of the well-known Royal Flush Valves, has permanently placed Mr. T. R. Burke as its representative in this territory, with headquarters at San Francisco. Announcement of Mr. Burke's appointment was made in this magazine last month. Mr. Burke's knowledge of the flush valve business, combined with the exceptional merit possessed by the Sloan valve, undoubtedly will insure a continuance of many successes with this fine specialty. Coast selling agents are R. W. Kinney Company, San Francisco; N. O. Nelson Manufacturing Company, Los Angeles; Miller-Enwright Company, Sacramento; M. L. Kline, Portland; Bowles Company, Seattle; Hughes & Company, Spokane, and Walsh & Gardner, Tacoma.

Some Big Steel Contracts

Dyer Bros.' Golden West Iron Works of San Francisco has been awarded the contract for the structural steel for an immense hotel to be erected in Honolulu for the Von M. Young Company. There will be 600 tons of steel, costing in excess of $50,000. The plans were prepared by Architect H. L. Kerr, 312 McCandles building, Honolulu.

Dyer Bros. are also fabricating the steel for a twelve-story Class A office building to be erected at Market and Second streets, San Francisco, for John S. Drumm from plans by Messrs. Wood & Simpson. They will also furnish the steel for the Native Sons' building to be erected in Sacramento from plans by Washington Miller of San Francisco.

The Golden Gate Iron Works has been awarded a contract for about $90,000 for the structural steel for a store and theater building at Market and Fourth streets, San Francisco, Cunningham & Politeo, architects.

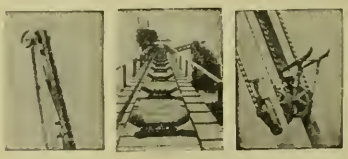
Industrial Equipment Company Enlarges

The Industrial Equipment Company has removed to its new shop and office building, 223 Main street, San Francisco, where, with increased equipment and facilities it is enabled to take care of its growing machinery business.

Together with the manufacture of its M. & W. Rotary Oil Burner, it is making automatic electric hoists, single-phase electric locomotives and the M. & W. blowers. It has the agency for Northern and Central California of several well-known Eastern machinery specialties, including the Nash turbine pumps and the Fort Wayne Engineering and Manufacturing Company's "Paul" water systems.

Preservation of Woodwork

Generally speaking, any wood will last a long time when protected from moisture. It will, however, lose its agreeable color and surface unless some means are used to protect it. The use of chemical preservatives is confined almost entirely to underground timbers and so has little use in millwork. One of the places millwork would be benefited by chemical treatment is at the base of porch columns, where treated wood might well be used where water is apt to penetrate. Creosote is the best of practically all preservatives, and there are a number of methods of using it. Paint is also effective if water can be kept out of all cracks, crevices, joints, etc. Where the paint merely holds the water in a pocket, we have the ideal conditions for fungus growth and ultimate decay.—Contract Record.



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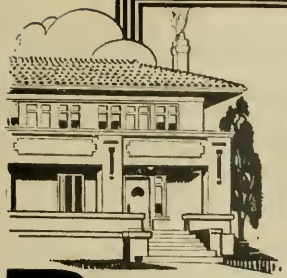

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But no matter how much added effort you put upon your work, if the manufacturer fails to do his part, your labor has been for naught. You are not likely to get any of the future work of your client's friends.

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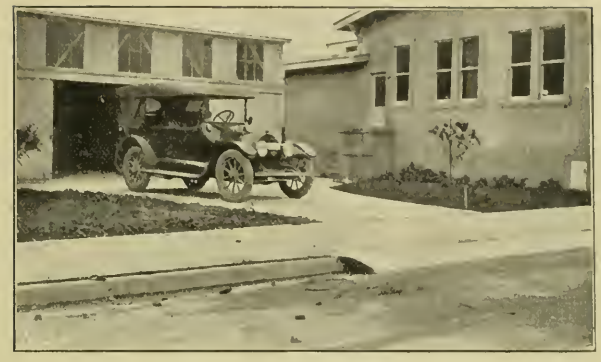

CORRUGATED IRON CULVERT FOR GARAGE APPROACH

Automobile Driveway Culverts

THE use of "Armco" iron culverts for garage driveways solves a problem which has been more or less of a bugbear to owners since the use of automobiles became so general. Owners declare the iron culvert satisfactory in every way. They are fully as durable as concrete and will carry twice the weight of the average machine.

"Armco" iron driveway culverts may be obtained in various sizes to provide ample waterway and can be quickly and easily placed in service at low cost.

The only precaution to be observed when installing an "Armco" culvert is to see that the edges are placed on a firm foundation and the outer edge so anchored that there will be no spreading of base. Where a concrete gutter already exists, a groove cut in the gutter for outer edge of culvert will accomplish the desired result and will afford the concrete covering used an opportunity of effecting a proper bond with the base on which it rests.

Lumber Dealers Should Advertise

More extensive trade and magazine advertising is essential to the future of the lumber industry, from toothpicks to houses, according to every speaker at the recent Lumbermen's National Convention in Chicago.

The speakers included James Kelley, editor of the Chicago Herald, who talked on publicity and the other phases of the merchandising problem and all hinged on the same general question of advertising the products of the sawmills. A dozen papers on this subject in its various forms were presented.

Evidence that Reinforcement Prevents Cracking of Concrete Pavement

Reinforcement of all concrete pavement is, in the opinion of many engineers, warranted because of the insurance it furnishes against cracking. Much sound theory is voiced in support of the conviction that reinforcement is a crack preventive, but equally sound evidence has been wanting. Where reinforced concrete pavements have not cracked the conviction is not certain that a plain slab would not have remained equally unbroken. It is interesting, therefore, to note the following curious bit of evidence: In Lake county, Ohio, the Madison South Ridge road, 5.43 miles of 16-foot slab divided into 33 1/3-foot blocks, had 90 scattered blocks reinforced. According to statement of H. P. Cummings, Lake county surveyor, one can follow throughout this road a longitudinal crack block after block until a block that was reinforced is met and here the crack ceases, to begin again after the reinforced slab is passed. In this example there would seem to be a direct comparison, in respect to safety from cracking, of plain and reinforced concrete pavement.

To Complete Cement Plant

The California Commissioner of Corporations has authorized the Old Mission Portland Cement Company to issue $625,000 in bonds for the completion of a cement manufacturing project in San Benito county. The Old Mission Portland Cement Company is incorporated at Reno, Nev., with an authorized capital stock of $3,500,000, by J. C. Kemp van Ee, L. A. Hilborn, L. Shaw, R. W. Hayes and J. C. Kemp van Ee, Jr.

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When writing to Advertisers please mention this magazine.

Willis Polk Compliments Gladding, McBean & Co.

June 8, 1916.

Gladding, McBean & Co.,
Crocker Building,
San Francisco.

Gentlemen: Just as the steps of the Parthenon were not laid out in mechanically precise and straight lines, but in artistically designed and slightly curved lines, both in plan and in elevation—just as its columns were delicately formed with an entasis of almost unattainable elusiveness—just as the geometrical centers of those columns were inclined inwardly so that their inward faces were plumb with and parallel to the inner walls of the Peristyle, so I think did medieval builders purposely lay their roof tiles in uneven courses and in lines not exactly straight.

After many years of consideration I have reached this conclusion.

Furthermore, I think that the warm grey tones of medieval roof tiles were the deliberate color choice of their designers and not entirely the result of the softening effect of the dust of ages.

I think all this was deliberately planned.

The ruins of the Parthenon are in a sad state, not that time has wreaked such havoc, but because the fortunes of war subjected that incomparable building to bombardment. The Coliseum in Rome owes its condition less to the ravages of time than to the fact that its walls were used as a quarry from which the stones were taken to build in Rome such modern buildings as St. Peter's and the Farnese Palace. Many of its scars represent the ruthless cupidity that lets men mar and destroy such glorious works of art, for no other purpose than to extract the bronze anchors that bound its stones together.

So I now desire to thank you for the trouble that you have taken, after several years of patient experiments, to finally achieve for me, in the roof of the Livermore houses, a full realization of my dream that an artistic tiled roof was within the range of commercial possibilities.

You have done this both in texture and in color. Furthermore, you have done it at a most moderate cost. You have truly made an artistic result a commercial possibility, and I thank you.

Another thing I want to thank you for is the production of a color tone in the architectural terra cotta for our Bourn residence, which is, in our judgment, eminently successful, far superior, we think, to any previous production of yours.

Very truly yours,
WILLIS POLK & CO.

Sanitation and Structural Materials

(Contributed)

With the extensive educational propaganda regarding bacteriology and the knowledge of the costly inroads that germs have made in the health, strength and happiness of mankind, personal hygiene and sanitation as it pertains to the food we eat, the clothes we wear, the houses we live in and the hospitals and sanitariums we build, is a consideration of first importance. We have learned that our happiness, upon which depends the state of our health, has an intimate relation to the observance of certain well-defined rules laid down by science for the avoidance of septic conditions.

Those architects who are called upon to specify a structural material that is manufactured to meet the demands of esthetics and sanitation will be interested in Vitrolite, a comparatively new product that measures up to these requirements.

This material is the product of a number of ingredients which are fused at a temperature of 3000 degrees Fahrenheit, and then rolled into sheets varying in thickness from one-fourth inch to one inch. The molten mass is ladled out of immense tanks and poured on a casting table, where a roller moves across it and smoothes the mixture to a certain thickness, and at the same time puts on the fire polished surface, for the beauty of which Vitrolite is noted.

Vitrolite has a perfectly uniform texture, it has a pleasing, soft, beautiful white color like statuary marble. It is not porous, so that it will not stain and it does not discolor. Its surface is smooth, hard and as fine as that on Dresden china, and yet as enduring as stone.

"In connection with a hospital, for instance," said an official of the Vitrolite Company of San Francisco, "aseptic conditions are imperative because of the demand for clean operative work, for which surgeons are accountable. Absolute responsibility for the welfare of a patient in these modern days rests with the surgeon, so that he in self-defense is vitally interested in making the rooms in which he operates aseptic.

"Vitrolite, therefore, on account of its superior qualities, is the material invariably selected for the walls and ceilings of sterilizing, operating and diet rooms, and in bath and toilet rooms.

"Dirt and dust may be so readily detected on the surface of it that it is especially easy to keep clean and spotless.

"Builders of fine homes are beginning to realize the fitness of this new material for kitchens, pantries and bathrooms and it is now found in these places in some of the finest homes in the country.

"The anchoring of Vitrolite to walls

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and ceilings is accomplished by Vitro Cement, which is soft and plastic and permits of readjustments in the settling of buildings without causing the material to crack.

"Many of the largest corporations in the country are now using the new material of clean, wholesome appearance for table tops in their lunch rooms and in laboratories and places of that sort.

"The National Cash Register Company, recognizing the superior qualities of Vitrolite, adopted it instead of marble for their machines and now every cash register is equipped with a slab of it.

"Kitchen cabinet manufacturers were quick to respond to the demand for an imperishable, clean, white material for the tops of their products and a number of them are now using Vitrolite for this purpose.

"Refrigerator and scale manufacturers were naturally interested in getting a substance that would be easily kept sanitary, that would wear well and that would not discolor, and as a result many of the best scales have Vitrolite platters, and refrigerators Vitrolite linings."

The following is a partial list of some of the local installations by the Vitrolite Construction Company, 34 Davis street, San Francisco:

City Hall, San Francisco—All wash basin cubbies and closets throughout the building.
Mills Building Annex—Corridor wainscotting.
Standard Oil Building—Wash basin cubbies, kitchen, shelves, etc.
Shredded Wheat Factory, Oakland—All toilets, urinals, shower baths, wash basins and wainscotting throughout building.
Carolan residence, Burlingame—Kitchens and ceilings.
Stewart Hotel, San Francisco—Barber shop.
Ramona Hotel, San Francisco—Barber shop.
McNear residence, San Francisco—Showers and bath rooms.
Dr. Gilbert Graham, Shreve Building—Dental offices.
Borchers Bros., Sacramento—Creamery.
Wurster & Metzer, Dunsmuir, Cal.—Butcher shop.
Boos Bros. Cafeteria, San Francisco—Counter tops and tray runners.
Also innumerable kitchens, cafe table tops, bath rooms, showers, laboratory tables, etc., for various firms.

Plans for Elaborate Flats

Architects Heiman & Schwartz, Nevada Bank building, San Francisco, have completed plans for an attractive flat building to be erected at the northwest corner of Washington and Buchanan streets, San Francisco, for M. E. Spiro. The building will be three-story frame and brick veneer, designed in the Colonial style.

The same architects have completed plans for a residence of the English design to be erected in Forest Hill for Jas. S. Malloch at a cost of $6,000.

A contract will shortly be awarded by the same architects for the construction of a three-story Class "C" apartment house and store building to be erected for the Union Trust Company at the northeast corner of Leavenworth and Sutter streets.

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Mastic Flooring for Hard Usage

A Mastic flooring that will stand very severe usage is being put on the market by Malott & Peterson, Inc., 682 Monadnock building, San Francisco. This firm is one of the oldest in its line in San Francisco and its reputation as roofing contractors is such that in announcing its plans for handling Mastic flooring the architectural profession and building trade will not question the merits of the material. Mastic flooring is not in an experimental stage. It has been given a thorough try-out and during the past year or two has been installed in such well-known plants as the Great Western Electrical Chemical Works at Pittsburg, Cal., 24,000 feet having been laid in the Cell Room. The California Fruit Canners' Association have had approximately 22,000 feet installed in several of their canneries, the Lewis Packing Company had 10,000 feet put in their new packing plant at Columbus avenue and Chestnut street, the Wells Fargo stable, Folsom street near Second, has 24,000 feet, and the Associated Milk Producers, 53 Clay street, are now having installed several thousand feet.

Mastic is especially intended as a flooring material for warehouses, factories, breweries and other places where extreme traffic conditions prevail or where unusual conditions make necessary a wearing surface that will resist hard usage, a surplus of water, or the action of acids.

It has been proven by long years of use that Mastic flooring will stand up under conditions such as the handling of wire rope, heavy hardware and other materials of a like nature. Under above mentioned conditions Mastic will not crack or disintegrate as cement floors do and there is absolutely no "dusting" connected with it. For breweries, canneries and other places where fruit acids or a surplus of water is used there is no other material that will withstand such usage for a continued length of time and still retain its vitality and wearing qualities. It has proven to be the only material that will resist conditions connected with stabling horses on an upper floor, as it is impervious to water and acids.

Its resiliency under extreme conditions of heat or cold makes it a suitable flooring material in any climate. It also reduces the insurance rate very materially in buildings of mill construction.

Improved materials and improved methods of handling are bringing this flooring into greater use as its superiority becomes better known.

Masonic Orphans' Home

John F. Blee, 515 Union League building, Los Angeles, has completed plans for the new buildings to be erected near Covina for the California Masonic Orphans' Home Association.

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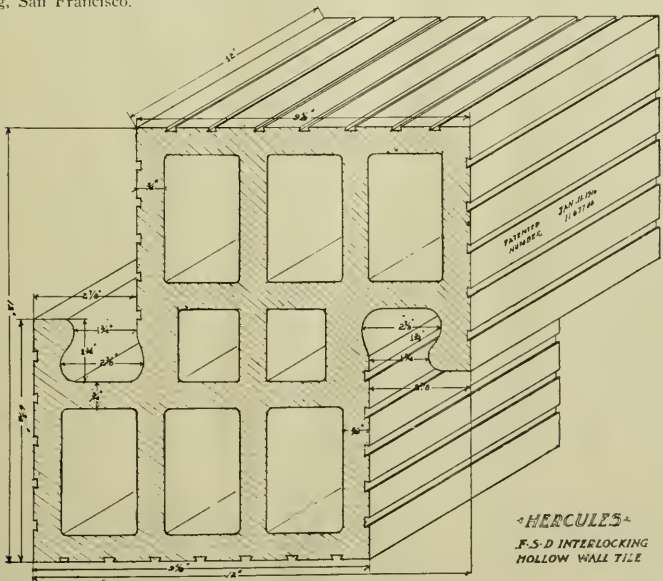
Jones-Moore Paint House, San Diego, Cal.

LAYING 12 INCH "HERCULES"

Laying 12-inch "Hercules" Interlocking Terra Cotta Tile at Eighth and Mission streets, San Francisco. This building will contain 29 stores and several warehouses and will cover almost an entire block. The owners are Arthur Arlett, B. G. McDougall and others. White & Gloor were the brick contractors. "Hercules" interlocking tile is manufactured by the Pratt Building Material Co. (Clarence F. Pratt, President), Hearst building, San Francisco.



12-Inch "Hercules" Interlocking Tile—13¼ of These Tile Make One Cubic Foot of Wall.

Zouri Drawn Metals Co. Makes Reply

The following is a copy of a statement prepared by the Zouri Drawn Metals Company and printed in the Niles Daily Sun, May 19, 1916, in answer to an article which appeared in the same publication on May 6th, and which was reprinted in The Architect and Engineer for May, under the heading "Kawneer Is the Victor":

"The litigation between the Kawneer Company and the Zouri Drawn Metals Company relates wholly to what is known as the 'scant bracket construction,' a form of sash construction which the Zouri Drawn Metals Company discontinued two years ago; and this litigation has nothing to do whatever with the standard lines of construction as manufactured by the Zouri Drawn Metals Company ever since that time.

"The motion decided by Judge Hand is not final. The Zouri Company has already appealed a similar case to the United States Court of Appeals at Cincinnati, and will have the right to appeal the New York case at any time within six months after a final judgment is entered in the present proceedings.

"The article of May 6th states that the Kawneer Company will have the right to collect damages from the Zouri Company and also to receive royalty from the merchants who have used the store front of the Zouri Company. This statement is not only misleading but absolutely false. In the event the Kawneer Company should finally be successful in this litigation, the damages which it can recover will be limited wholly to the construction involved in the litigation and will not in any way affect or have to do with the present construction of the Zouri Company or the fronts which they have put in during the past two years. And in any event the damages recovered would be very small and will not in any way affect the financial standing of the company or its future operations. And in no event can the Kawneer Company collect damages from the Zouri Company and also from the merchants using the fronts.

"It should be clearly understood that this litigation relates only to a single member of the store front and does not affect or have to do with the construction comprising the whole front.

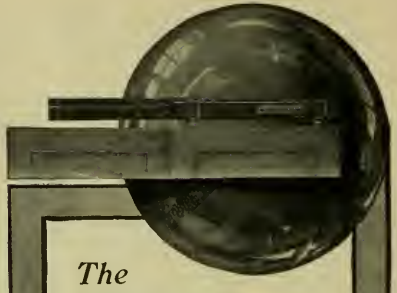
"There is one statement in the article of May 6th which is absolutely correct, and that is that patent litigation extends over a long period of time. This case is no exception to the rule. The end of the present case is not in sight."

Increased Use of Interlocking Tile

The Denison Block Company, Sacramento and San Francisco Division, reports the interlocking tile business better in California today than at any time since the company commenced to do business in California. This is attributed to at least two things—first, building conditions are very much on the improve; and second, architects are specifying interlocking tile with increasing confidence in the good qualities of this product. Manager D. A. Cannon states that his company has thirteen contracts now under way, including several of the more important State buildings. The two San Leandro schools are also to be built of Denison tile.

Removal Notice

I. R. Kissel, painter and decorator, announces the removal of his office to 1747 Sacramento street, between Polk street and Van Ness avenue, San Francisco. Mr. Kissel's telephone number is Franklin 548.



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Concrete Piles Not Patented

Judge Oscar A. Trippet of the United States District Court has handed down a decision in the case of the Raymond Concrete Pile Company vs. the City of Los Angeles. By his decision he declares that the city did not infringe upon patents of the Raymond Concrete Pile Company in constructing piling for use in the inner harbor. The suit was tried some time ago by Judge Trippet and is the subject of an exhaustive opinion. As expressed in his findings, the patents alleged to have been infringed upon do not cover a basic invention. He ordered the suit dismissed.

Woolen Mill for Oakland

A site has just been secured at the foot of Sixtieth avenue, East Oakland, upon which will be constructed a $500,000 plant for the manufacture of woolen goods. It is stated that William G. Gosslin of Portland, Ore., will head the new concern.

An Open Letter To Architects

THIS LETTER is addressed to architects in any city in the United States where building operations are of sufficient magnitude throughout the year to justify a partnership such as is contemplated, and to those who are desirous of obtaining the cooperation of a man of mature judgment, one who is still in his prime, with all the vim and energy of a man in his twenties. The experience gained through contact with men of many minds has made the writer adaptable and pliable rather than set or self-centered. He carried on a successful practice in architecture for about ten years or until unfavorable climatic conditions brought on a general breakdown in health and a complete change was imperative. Now, having fully recovered, he is desirous of taking up the work by entering the office of an architect or constructing engineer as associate or partner. As to qualifications, integrity and rating, he prefers to offer these in a personal letter or interview, to those interested.

He realizes, as many architects do, that double the business is secured and more effectively carried on when the right combination of minds and dispositions are joined under one unit; he therefore inserts this letter with the hope of attracting the attention of one earnestly desirous of finding a man qualified to perform any part of the work in the profession, solicit business and adjust disputes; a real active partner in every sense of the word.

(Signed) MR. BROWN, care The Architect & Engineer of California, Monadnock Building, San Francisco, Cal.

To Abolish Swing Bridges

Preliminary steps to abolish the old swing bridges across Oakland's inner harbor from Oakland to Alameda have been taken by the Chambers of Commerce of both cities, as well as by the city councils of these municipalities. The authorities are seriously considering the erection of bridges of the bascule type to care for the rapidly increasing traffic over the present bridges and which also will do away with the slow-moving swings that are now a great hindrance to the water traffic in the inner harbor.

At present there are two swing bridges —one used exclusively for the Southern Pacific suburban service and the other caring for all other traffic, including trolleys. The time required to open the swings not only causes long delays in street traffic, but also holds up the shipping to so great an extent that vessel men say they are a menace to navigation.

Los Angeles Harbor Improvements

With the tentative draft of a budget for the harbor department for the coming year, President Woodman of the Harbor Commission, has announced that the Los Angeles Council will be asked to provide for the submission of a new harbor bond issue of $2,500,000 for the June election. The harbor bond fund at the present time amounts to about $867,-000 and the arguments to be presented in asking another issue this year will cite the promise of the city when the harbor district was annexed that $10,000,000 would be spent by the city within the next ten years.

A Beautiful Sewer

When Villa was in possession of Juarez some one persuaded him that the city needed a sewer system and street paving. An American contractor secured the job. When the work was well advanced Villa announced that he wished to look it over, so the contractor took him around in an automobile. Pancho stared at everything and began to swell up like a balloon. "Ah," said he, "Diaz would never have done all this—never! What a beautiful sewer system." And all the time he was looking at the pavement. He didn't know the difference. — Engineering-Contracting.

Store and Hotel Buildings

Plans have been prepared by A. Merrill Bowser of Lindsay, who is associated with Messrs. Glass & Butner of Fresno, for a two-story store and hotel building for G. P. Edwards, proprietor of the Hotel Lindsay. There will be twenty-six rooms with shower and tub baths, outside sleeping porches, etc.

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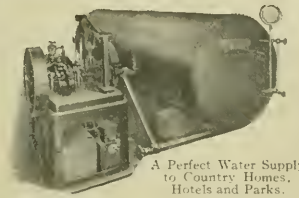

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Architect Skidmore Busy

H. Skidmore, Hearst building, San Francisco, has completed plans for a two-story frame and plaster apartment house to be built in Oakland on Montell near Piedmont avenue. The building will cost $15,000 and contain twelve three-room apartments.

Plans for a palatial two-story and basement residence in Crocker Highlands, Oakland, are being completed and will be ready for figures in the near future. The building will be frame with brick veneer and Mission tile roof. An estimated cost of $30,000 is placed on the work.

Plans are being prepared for a ten-story Class "A" steel frame hotel apartment building to be built on Bush street, San Francisco, at a cost of about $100,000. The design will be English with an exterior of pressed brick and cream terra cotta bays and a slate roof. The building will be 60x79 feet and contain four stores on the first floor.

Plans for two residential flat buildings to be located in the vicinity of Jackson street near Presidio avenue, San Francisco, are being drawn.

Mr. Skidmore is also preparing plans for the city of Berkeley for an open-air reinforced concrete swimming pool, 50x100 feet, to be built in the style of a Greek theater, costing $8,000, and a one-story frame and brick veneer branch library building to cost $20,000. The building will be 30x50 feet, with 30-foot barrel-vaulted ceiling. There will be a slate roof and a hot air heating system.

Plans for Two Garages

Plans have been prepared by Messrs. Richardson & Burrell, Albany block, Oakland, for two Class "C" garages to be erected in Oakland's auto row. One will be a one-story building at the northeast corner of Broadway and Twenty-eighth street for Mr. Geo. W. S. Stark of Oakland and will cost $20,000. The construction will be of steel, brick and terra cotta. The other building will be two stories, located on Broadway near Twenty-eighth street, and will be for Mr. H. P. Gray of Oakland. The building will be constructed of brick and terra cotta at an estimated cost of $40,000.

Plans were prepared by the same architects for a three-story frame and plaster apartment house to be erected on Oak street near Fourteenth street, Oakland, for the United Home Builders. The building will contain thirty 3, 4 and 5 room apartments. Cost, $55,000.

Stockton Shop Building

Joseph Losekann of Stockton has completed plans and let contracts for a two-story brick office and shop building for the Wagner Leather Company of that city.

Book Review

INDICATION IN ARCHITECTURAL DESIGN. By David Varon, Architect, Diplome Ecole des Beaux-Arts, Paris, formerly Professor of Architectural Design at Syracuse University and the University of Illinois. New York: The Wm. T. Comstock Company. Cloth, 9x12 inches, 150 pages, plate paper. Price, $5.00 net.

This book introduces a subject that is comparatively new among architectural publications. It fills a need long felt by the student of the profession at a time when the master teachers have answered the call of their country.

The most valuable medium of instruction in our schools is the clever pencil of the professor of design. The student improves his sense of proportion and increases his fund of ideas more by this method than by any other. This book will in a measure take the place of personal instruction for those who study without that advantage. It will enable the draftsman in the office to place his ideas upon paper quickly and attractively. It will be of great assistance to the schools of architecture both in design and historical sketching.

The architect when conferring with his client may say, "This is what you want," and will find his pencil far better than words to convey his idea. It will be of infinite advantage to him to make a pretty sketch with a few sure strokes of his pencil.

We must not make the mistake of considering this work as a copy book. Its purpose is to show the student the method by which he may sketch with the real object as a model. It serves as a base upon which may be formed an individual technique.

One of the most common faults of architectural designing is the inability to think in three dimensions, the failure to visualize. A sketch in two dimensions is a mere working drawing. It never gives a true idea of the proportion and appearance of the future structure. The third dimension should be introduced by casting shadows or perspective. This may be quickly and attractively done during the study of a problem by means of free-hand pencil sketches as shown in Mr. Varon's work.

Mr. Varon's book is in reality a course in architectural elements and composition introduced through the medium of free-hand pencil sketching. This method gives a clearer idea of architectural forms than simple line projection. The plates are very clever, the work of a true artist, and are taken from the best examples of architecture. The text is of much interest and shows a complete understanding of the subject. The author also introduces some very interesting plates on composition of plan and the seldom consider study of silhouette in architecture.